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DEPARTMENT OF THE AIR FORCE WASHINGTON DC

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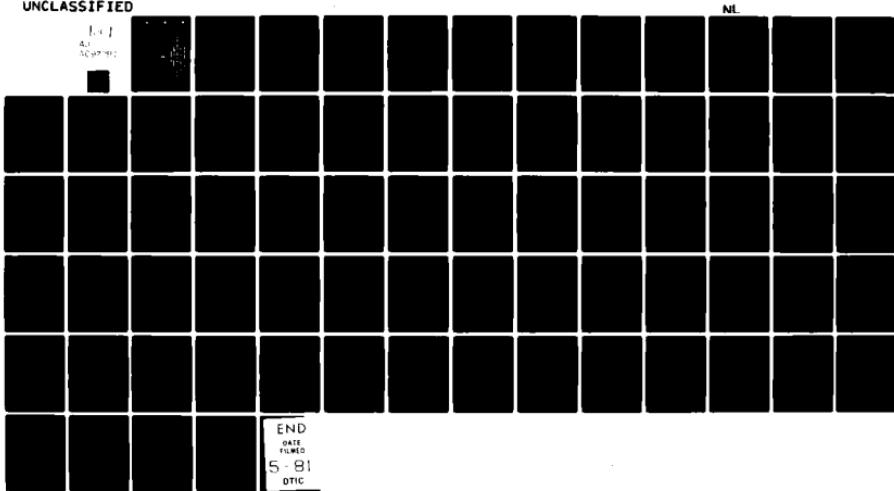
DEPARTMENT OF THE AIR FORCE JUSTIFICATION OF ESTIMATES FOR FISC--ETC(U)

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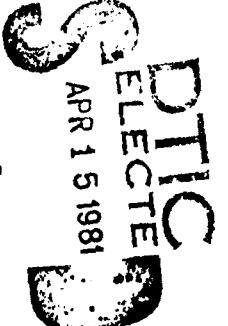
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DEPARTMENT OF THE
AIR FORCE

JUSTIFICATION OF ESTIMATES FOR FISCAL YEAR 1981

SUBMITTED TO CONGRESS

JANUARY 1980



11 Jan 89

RESEARCH, DEVELOPMENT, TEST, & EVALUATION, AIR FORCE.

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RESEARCH, DEVELOPMENT, TEST AND EVALUATION, AIR FORCE

For expenses necessary for basic and applied scientific research, development, test and evaluation, including maintenance, rehabilitation, lease, and operation of facilities and equipment, as authorized by law: (4,941,943,000) to remain available for obligation until September 30, (1981). \$7,085,300,000
1982

Program and Financing (in thousands of dollars)		Budget plan (amounts for RDT&E actions programmed)			Obligations		
Identification code	57-3600-0-1-051	1979 actual	1980 est.	1981 est.	1979 actual	1980 est.	1981 est.
Program by activities:							
Direct:							
1. Technology base	492,253	552,446	633,851	493,589	505,322	630,022	
2. Advanced technology development	259,075	278,500	291,496	288,774	259,091	291,861	
3. Strategic programs	1,422,694	1,581,959	2,716,147	1,411,505	1,568,425	2,611,787	
4. Technical programs	1,001,011	957,141	1,390,605	999,022	980,741	1,362,969	
5. Intelligence and communications	305,822	669,396	918,586	309,820	623,298	878,730	
6. Defensewide mission support	878,033	986,590	1,134,815	863,713	923,574	1,121,721	
Total direct	4,358,688	5,026,032	7,085,300	4,346,423	4,860,451	6,997,090	
Reimbursable program (total)	409,441	461,900	489,100	419,985	430,549	486,910	
Total:	4,768,329	5,487,932	7,574,400	4,766,408	5,291,000	7,386,000	
Financing:							
Offsetting collections from:							
Federal funds	-368,133	-405,000	-405,000	-341,294	-405,000	-405,000	
Trust funds	-36,728	-11,900	-39,100	-30,624	-11,900	-39,100	
Non-federal sources	-4,580	-45,000	-45,000	-5,420	-45,000	-45,000	
Unobligated balance available, start of year:							
For completion of prior year budget plans	.....	.....	.....	.....	.....	.....
Available to finance new budget plans	.....	.....	.....	.....	.....	.....
Reprogramming from or to prior year budget plans	-21,785	-44,000	.....	-348,402	-296,435	-493,367	
Unobligated balance transferred from other accounts	.....	.....	.....	.....	.....	.....
Unobligated balance available, end of year:							
For completion of prior year budget plans	.....	.....	.....	.....	.....	.....
Available to finance subsequent year budget plans	44,000	44,000	44,000	296,435	493,367	681,767	
Unobligated balance lessing	21,785	44,000	44,000	21,785	44,000	44,000	
Budget authority:							
4.394,977	5,026,032	7,085,300	4,394,977	5,026,032	7,085,300	7,085,300	
Budget authority:							
4,321,040	4,941,943	7,085,300	4,321,040	4,941,943	7,085,300	7,085,300	
-17,900	.....	.....	-17,900	.....	.....	.....
80,000	2,859	.....	80,000	.....	2,859	.....
4,383,140	4,944,802	7,085,300	4,383,140	4,944,802	7,085,300	7,085,300	
11,837	81,230	.....	11,837	81,230	.....	.....
Relation of obligations to outlays:							
41.00 Appropriation:							
41.00 Obligations incurred, net	4,389,070	4,829,100	6,896,900				
42.00 Transferred to other accounts	1,566,506	1,874,059	2,122,159				
43.00 Transferred from other accounts	-1,874,059	-2,122,159	-3,000,059				
50.01 Adjustments in expired accounts	-1,759	-	-				
77.00 Outlays	4,079,757	4,581,000	6,019,000				

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Research, Development, Test, and Evaluation, Air Force

Program and Financing (in thousands of dollars)

1978 Fiscal Year Program

Obligations

Identification code	Budget plan (amounts programmed)		1979 actual		1980 est.		1981 est.	
	RDT&E actions	1979 est.	1980 est.	1981 est.	1979 actual	1980 est.	1981 est.	
Program by activities:								
Direct:								
1. Technology base								
2. Advanced technology development								
3. Strategic programs								
4. Technical programs								
5. Intelligence and communications								
6. Defensewide mission support								
Total direct								
Reimbursable program (total)								
10.00	Total							
FINANCING:								
Offsetting collections from:								
11.00	Federal funds							
13.00	Trust funds							
14.00	Non-federal sources							
21.40	Unobligated balance available, start of year:							
	For completion of prior year budget plans							
	Reprogramming from or to prior year budget plans							
25.00	Unobligated balance lapsing							
Budget authority								
11.00	Federal funds							
13.00	Trust funds							
14.00	Non-federal sources							
21.40	Unobligated balance available, start of year:							
	For completion of prior year budget plans							
	Reprogramming from or to prior year budget plans							
25.00	Unobligated balance lapsing							

Research, Development, Test, and Evaluation, Air Force

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Program and Financing (in thousands of dollars)		1979 Fiscal year program		
Budget plan (amounts for RDT&E actions programmed)		Obligations		
Identification code	87-3600-0-1-051	1979 actual	1980 est.	1981 est.
Program by activities:				
Direct:				
1. Technology base	492,253	.....	485,977	6,276
2. Advanced technology development	259,075	.....	251,864	7,191
3. Strategic programs	1,422,694	.....	1,315,791	106,903
4. Technical programs	1,000,011	.....	879,911	121,100
5. Intelligence and communications	305,822	.....	289,500	16,322
6. Defensewide mission support	876,033	.....	852,749	25,284
Total direct	4,358,868	.....	4,075,612	283,076
Reimbursable program (total)	400,441	.....	386,082	13,359
10.00 Total	4,768,329	.....	4,471,694	296,435
Financing:				
Offsetting collections from:				
11.00 Federal funds	-366,133	.....	-366,133	.....
13.00 Trust funds	-36,728	.....	-36,728	.....
14.00 Non-federal sources	-4,580	.....	-4,580	.....
21.40 Unobligated balance available, start of year:	.....	.....	.....	.....
For completion of prior year budget plans	.....	.....	.....	.....
Available to finance new budget plans	.....	.....	.....	.....
22.40 Unobligated balance transferred from other accounts	-44,000	.....	.....	.....
24.40 Unobligated balance available, end of year:	.....	.....	.....	.....
For completion of prior year budget plans	7,911	.....	7,911	.....
Available to finance subsequent year budget plans	44,000	.....	296,435	.....
26.00 Unobligated balance lapsing	44,000	.....	44,000	.....
Budget authority	4,394,977	.....	4,394,977	.....
Budget authority:				
40.00 Appropriation	4,321,040	.....	4,321,040	.....
41.00 Transferred to other accounts	-17,900	.....	-17,900	.....
42.00 Transferred from other accounts	80,000	.....	80,000	.....
43.00 Appropriation (adjusted)	4,383,140	4,383,140
50.01 Reappropriation	11,637	11,637

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Research, Development, Test, and Evaluation, Air Force

Program and Financing (in thousands of dollars)

Identification code	57-3600-0-1-051	Budget plan (amounts for		1980 Fiscal year program	
		RDT&E actions programmed)	1979 actual	1980 est.	1979 actual
			1979 actual	1980 est.	1979 actual
					1980 est.

Program by activities:

Direct:		552,446			499,046
1. Technology base		276,500			251,900
2. Advanced technology development		1,561,959			1,461,522
3. Strategic programs		957,141			859,841
4. Technical programs		669,396			606,976
5. Intelligence and communications		986,590			898,290
6. Defense/Service mission support					86,300
Total direct		5,026,032			4,577,376
Reimbursable program (total)		461,900			417,190
10.00 Total		5,487,932			4,994,566

Financing:

Offsetting collections from:					
11.00 Federal funds		-405,000			-405,000
13.00 Trust funds		-11,900			-11,900
14.00 Non-federal sources		-45,000			-45,000
21.40 Unobligated balance available, start of year:					
For completion of prior year budget plans					
24.40 Unobligated balance available, end of year:					
For completion of prior year budget plans					
Budget authority		5,026,032			5,026,032
Budget authority:					
40.00 Appropriation		4,941,943			4,941,943
42.00 Transferred from other accounts		2,859			2,859
43.00 Appropriation (adjusted)		4,944,802			4,944,802
50.01 Reappropriation		81,230			81,230

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Research, Development, Test, and Evaluation, Air Force

Program and Financing (in thousands of dollars)		1981 Fiscal year program	
Identification code		Budget plan (amounts for RD&E actions programmed)	
57-3600-0-1-051		1979 actual	1980 est.
Program by activities:			
Direct:			
1. Technology base		633,651	576,622
2. Advanced technology development		291,496	265,261
3. Strategic programs		2,716,147	2,491,390
4. Tactical programs		1,390,605	1,265,469
5. Intelligence and communications		918,586	816,310
6. Defensewide mission support		1,134,815	1,033,421
Total direct		7,065,300	6,446,433
Reimbursable program (total)		489,100	444,200
10.00	Total	7,574,400	6,892,633
Financing:			
Offsetting collections from:			
11.00	Federal funds	-405,000	-405,000
13.00	Trust funds	-39,100	-39,100
14.00	Non-federal sources	-45,000	-45,000
24.40	Unobligated balance available, end of year: For completion of prior year budget plans		681,767
	Budget authority	7,085,300	7,085,300

Research, Development, Test, and Evaluation, Air Force
 Object Classification (in thousands of dollars)

28 JAN 80

Identification code	57-3600-0-1-051	1979 actual	1980 est.	1981 est.
Personnel compensation:		412,277	443,982	444,225
11.1 Permanent positions		1,746	1,376	1,045
11.3 Positions other than permanent		7,811	8,376	8,645
11.5 Other personnel compensation		421,834	452,358	452,870
Total personnel compensation		400,968	431,443	434,427
Direct obligations:		39,429	41,294	41,682
Personnel compensation		38	30	30
12.1 Personnel benefits: civilian personnel		35,313	35,426	36,244
13.0 Benefits for former personnel		5,767	4,051	4,222
21.0 Travel and transportation of persons		37,636	42,721	46,096
22.0 Transportation of things		1,292	773	834
23.2 Communications, utilities and other rent		24,422	27,805	31,569
24.0 Printing and reproduction		3,722,361	4,168,773	6,183,336
25.0 Other services:		51,526	62,636	67,587
Purchases from industrial funds		27,671	45,497	49,091
Contracts		4,346,423	4,860,451	6,697,090
Total direct obligations		20,868	20,915	18,443
Reimbursable obligations:		1,954	1,958	1,726
Personnel compensation		6,071	6,078	6,069
12.1 Personnel benefits: civilian personnel		376	410	442
21.0 Travel and transportation of persons		9,575	15,108	16,302
22.0 Transportation of things		188	406	438
23.2 Communications, utilities and other rent		218,472	353,289	410,047
24.0 Printing and reproduction		132,400	132,400	132,400
25.0 Other services:		25,520	26,304	28,382
Contracts		4,561	6,061	6,561
Other		419,985	430,549	466,910
Total reimbursable obligations		4,766,408	5,291,000	7,386,000
Total obligations				

Personnel Summary (in thousands of dollars)

Identification Code 57-3600-0-1-051	1979 actual	1980 estimate	1981 estimate	1982 estimate
Total number of permanent positions	18,365	18,745	18,735	18,735
Full-time equivalent of other positions	30	30	30	30
Total compensable work-years	18,779	18,704	18,750	18,750
Average ES salary	47,477	50,000	50,000	50,000
Average GS grade	9.42	9.42	9.42	9.42
Average GS salary	22,558	24,372	24,279	24,279
Average salary of ungraded positions	18,968	20,392	20,652	20,652

SECTION 2

PROGRAM ELEMENT
LISTING

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PROGRAM ELEMENT LISTING

INTRODUCTION AND EXPLANATION OF CONTENTS

This section provides an overview of the Air Force Research, Development, Test and Evaluation program. The detailed listing is preceded by three summaries; the first by Research Category, the second by Budget Activity and the third by FYDP Programs.

A separate document, Descriptive Summaries, furnishes narrative information on all RDT&E program elements and projects of \$5.0 million or more. The number in the right hand column of this Program Element Listing refers to the appropriate page in the Descriptive Summaries.

The funding information included in this listing corresponds to that contained in The Budget of the United States Government, 1981 Appendix.

Data for FY 1979 and FY 1980 have been adjusted to achieve comparability with the revised program element and project structure for FY 1981. The revised structure contained in the FY 1981 budget request is consistent with the Program Element Listing, dated January 1979, except as follows:

Program Element

Budget Activity 1, Technology Base

62704F VHSI Circuits

Restructuring of effort previously funded under 62204F, Aerospace Avionics.

Budget Activity 2, Advanced Technology Development

63254F Forward Swept Wing Aircraft

New program proposed for FY 1982.

63433F Advanced Sensor Demonstration

New program proposed for FY 1982.

Budget Activity 3, Strategic Programs

64758F B-52 Companion Trainer Aircraft

New program proposed for FY 1981.

<u>Program Element</u>	<u>Remarks</u>
<u>Budget Activity 4, Tactical Programs</u>	
63234F Enforcer Aircraft	New program funded by Congress in FY 1980.
63616F Air-Launched Assault Breaker	New program proposed for FY 1981.
64231F C-X	New program proposed for FY 1981.
64311F Anti-Rad Ms1 Eng Dev	New program proposed for FY 1982.
64314F Adv Med Range Air-to-Air Ms1	New program element initiating full scale development effort for PE 63370F.
64412F Common Multimode Radar	Title change. Formerly Adverse Weather Strike.
64616F Air-Launched Assault Breaker	New program proposed for FY 1982.
64707F Weather Systems	New program proposed for FY 1981.
64737F Airborne Self-Protection Jammer	Restructuring of effort previously funded under PE 64739F, Tactical Protective Systems.
27252F EF-111 Squadrons	Title and program element number change. Formerly EF-111A and 64220F.
<u>Budget Activity 6, Defensewide Mission Support</u>	
63707F Weather Systems	New program proposed for FY 1981.
64268F Acft Engine Component Imp Program	New program initially funded by Congress in FY 1980.

Budget Activity 6, Defensewide Mission Support (Continued)

		<u>Remarks</u>
64411F	Space Shuttle	Program element number change. Formerly 63411F.
35130F	Consolidated Space Operations Center	New program proposed for FY 1981.

DEPARTMENT OF THE AIR FORCE
FY 1981 RDT + E PROGRAM

EXHIBIT NO. 1

JULY 28, 1980

SUMMARY

THOUSANDS OF DOLLARS

	FY 1979	FY 1980	FY 1981	FY 1982
SUMMARY RECAP OF RESEARCH CATEGORIES				
RESEARCH	115,025	119,634	144,304	171,594
EXPLORATORY DEVELOPMENT	387,228	433,446	489,554	544,346
ADVANCED DEVELOPMENT	1,189,347	1,151,464	1,041,790	1,136,729
ENGINEERING DEVELOPMENT	1,247,061	1,641,000	3,111,042	3,047,534
MANAGEMENT AND SUPPORT	536,333	543,390	589,412	625,794
RESEARCH AND DEVELOPMENT (FYDP PROGRAM 6)	-----	-----	-----	-----
OPERATIONAL SYSTEMS DEVELOPMENT	3,467,594	3,886,796	5,376,661	6,330,846
891,294	1,137,236	1,748,634	1,763,846	-----
TOTAL RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE	4,355,800	5,261,332	7,085,344	8,110,744
SUMMARY RECAP OF BUDGET ACTIVITIES				
TECHNOLOGY BASE	492,253	552,446	633,654	714,638
ADVANCED TECHNOLOGY DEVELOPMENT	259,775	278,544	291,496	306,644
STRATEGIC PROGRAMS	1,422,694	1,561,959	2,146,147	3,322,424
TACTICAL PROGRAMS	1,041,111	1,957,143	1,396,665	4,435,285
INTELLIGENCE AND COMMUNICATIONS	335,822	669,396	918,586	965,522
DEFENSEWIDE MISSION SUPPORT	878,433	906,594	1,164,815	1,143,059
TOTAL RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE	4,355,838	5,260,632	7,085,344	8,110,744
SUMMARY RECAP OF FYDP PROGRAMS				
STRATEGIC FORCES	264,937	278,199	345,106	433,635
GENERAL PURPOSE FORCES	245,197	175,641	156,368	182,649
INTELLIGENCE AND COMMUNICATIONS	340,457	661,196	1,033,845	1,119,057
AIRCRAFT/SEALIFT	36,500	62,704	11,986	15,244
RESEARCH AND DEVELOPMENT (FYDP PROGRAM 6)	3,467,594	3,886,796	5,376,401	6,330,846
CENTRAL SUPPLY AND MAINTENANCE	3,128	1,053	1,392	1,045
SUPPORT OF OTHER NATIONS	1,275	1,944	1,976	1,982
TOTAL RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE	4,355,808	5,026,032	7,485,344	8,110,744

DEPARTMENT OF THE AIR FORCE
FY 1981 R&T + E PROGRAM

EXHIBIT K-1

APPROPRIATION: 3610 F RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE

DATE 28 JAN 1980

PROGRAM LINE ELEMENT NO NUMBER	ITEM NOMENCLATURE	ACT	FY 1980	FY 1981	FY 1982	Des. Sum. Pg.
1 61111F	IN-HOUSE LAB INDEPENDENT RESEARCH	1	4,244	9,044	10,244	11,644 J 1
2 61112F	DEFENSE RESEARCH SCIENCES	1	96,325	110,000	134,100	159,900 J 4
3 62111F	GEOPHYSICS	1	25,876	27,604	32,104	35,444 J 45
4 62112F	MATERIALS	1	32,244	34,420	39,144	43,544 J 53
5 62211F	AEROSPACE FLIGHT DYNAMICS	1	47,075	49,044	56,044	62,544 U 58
6 62212F	AEROSPACE BIOTECHNOLOGY	1	29,167	31,044	35,044	39,844 J 76
7 62213F	AEROSPACE PROPULSION	1	43,417	46,500	53,500	60,100 U 83
8 62214F	AEROSPACE AVIONICS	1	54,945	55,200	56,040	58,044 J 96
9 62215F	TRAINING/SIMULATION TECH	1	11,381	10,540	13,000	14,000 J 112
10 62312F	ROCKET PROPULSION	1	27,572	28,600	32,000	36,500 U 120
11 62611F	ADVANCED WEAPONS	1	30,469	31,904	36,904	41,904 U 134
12 62612F	CONVENTIONAL MUNITIONS	1	26,744	29,604	29,504	32,074 U 147
13 62712F	COMMAND/CONTROL/COMMUNICATION	1	52,113	54,416	63,200	65,074 U 160
14 62713F	ERS UTILIZATION TECH	1	4,343	4,500	5,600	6,200 U 191
15 62714F	VERY HIGH SPEED CIRCUITS	1	30,430	34,251	41,138	49,138 U 197
	TECHNOLOGY BASE	492,253	552,446	633,651	714,036	
16 63212F	ACFT FUEL/PROPELLANT SUBSYS INTEGRATION	2	13,200	19,000	13,500	21,500 U 201
17 63213F	ADV AVIONICS FOR ACFT	2	11,176	8,304	14,944	16,744 U 206
18 63215F	FLT /VEHICLE TECHNOLOGY	2	10,000	8,964	7,944	6,000 J 216
19 63216F	RECON SENSORS/PROCESSING TECHNOLOGY	2	31,650	6,400	6,900	7,700 U 222
20 63211F	AEROSPACE STRUCTURES/MATERIALS	2	16,994	13,000	18,600	21,000 U 226
21 63215F	AVIATION TURBINE FUEL TECHNOLOGY	2	2,675	2,000	4,000	2,900 J 236
22 63216F	ADV TURBINE ENGINE GAS GENERATOR	2	18,000	30,000	25,764	26,000 U 240

DEPARTMENT OF THE AIR FORCE
 FY 1981 RDT + E PROGRAM
 APPROPRIATION 3601: RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE

EXHIBIT 4-4

DATE 26 JAN 1980

PROG/AM LINE ELEMENT NC NUMBER	ITEM Nomenclature	ACT	THOUSANDS OF DOLLARS			Des. Sum. Pg.
			FY 1979	FY 1980	FY 1981	
23	63247F SPECIAL POWER SYSTEMS	2	2,943	2,000	3,200	7,140 U
24	63227F ADVANCED SIMULATOR DEVELOPMENT	2	5,865	2,743	4,500	12,108 J 245
25	63247F DIGITAL AVIONICS INFO SYS	2	6,500	9,200	14,600	30,300 U
26	63247F AFV FIGHTER TECH INTEGRATION	2	2,450	2,600	3,000	8,050 U 249
27	63247F AIRCRAFT SUBSYSTEMS TECH	2	3,400	5,300	13,000	22,700 U 254
28	63247F MCCULLAR AUTOMATIC TEST EQ	2	19,700	21,600	23,300	64,600 U 257
29	63247F LINCOLN LABS	2	7,055	7,000	7,000	21,050 J 261
30	63247F FORWARD SWEPT WING AIRCRAFT	2	4,655	7,000	8,100	19,750 J 265
31	63312F AFV MALE PROPULSION	2	22,670	21,000	25,500	69,170 U
32	63411F ADVANCED SENSORS DEMONSTRATION	2	9,070	8,600	7,900	25,570 U 270
33	63411F RECONVENTIONAL WEAPONS	2	2,132	2,100	2,100	6,330 U 282
34	6345F ADVANCED RADAR/TECH	2	3,620	4,200	4,100	11,920 J 289
35	63247F REARLINE DEMONSTRATION PROG	2	2,050	2,700	3,900	8,650 U 293
36	63247F CIVIL ENVIRONMENTAL ENG TECH	2	3,640	4,200	4,100	12,940 J 296
37	63247F ADVANCED COMPUTER TECHNOLOGY	2	7,370	8,600	11,600	27,570 J 300
38	63247F ELECTRO-OPTICAL WARFARE	2	4,250	5,200	5,700	15,150 U 306
39	63247F COUNTER-ACCOMPLISHMENT MEASURES	2	1,700	1,600	1,700	4,900 J 312
40	63711F INNOVATIONS IN EDUCATION/TNG	2				

DEPARTMENT OF THE AIR FORCE
FY 1981 - RDT & PROGRAM

APPENDIX A: RESEARCH DEVELOPMENT TEST & EVAL AIR FORCE

EXHIBIT A-1

PROG/CON LINE ELEMENT NO NUMBER	ITEM Nomenclature	A-T	FY 1979	FY 1980	FY 1981	FY 1982	C Sum. PC.	Des.
41	62700F COMM CONTL + COMM AGV DFW ADVANCED TECHNOLOGY DEVELOPMENT	2	6,135	6,444	9,146	17,144	318	
			259,475	278,544	291,496	336,646		
42	62200F CRUISE MISSILE CARRIER ACFT	3	13,041	3,0,074	3,0,074	3,0,074	322	
43	62210F ELECTRONICALLY AGILE RADAR	1	14,944	3,0,064	3,0,064	3,0,064	325	
44	62220F ACPIRE PENETRATION EVALUATION (E1)	3	156,153	54,944	3,0,744	3,0,744	325	
45	63300F Enhanced IRAM TECHNOLOGY	3	105,044	95,134	224,944	120,1744	335	
46	63310F ADV REALISTIC RE-ENTRY SYS	3	58,054	45,444	45,444	45,444	348	
47	63314F STRATEGIC HOMER ENHANCEMENT	3	5,0,054	5,0,054	5,0,054	5,0,054	351	
48	63318F ADV STRATEGIC AIR LAUNCH PSL	3	4,0,054	25,074	25,074	25,074	351	
49	63319F ADVANCED TECHNOLOGY CRUISE MISSILE	3	1,0,044	1,0,044	1,0,044	1,0,044	357	
50	62420F PSL SURVEILLANCE TECH	3	5,0,045	3,0,364	12,0,044	14,0,044	360	
51	63420F SPACE SURVEILLANCE TECHNOLOGY	3	35,0,044	42,144	44,0,044	57,0,044	361	
52	62420F MACHING INFORMATION CORRELATION	3	3,0,348	3,0,642	3,0,044	6,0,644	373	
53	63421F SPACE COMMUNICATIONS	3	3,0,644	32,944	27,0,044	44,0,244	377	
54	62610F TACTIC OPER NUDGET DETECT SYS	3	9,0,244	21,0,944	21,0,944	21,0,944	380	
55	63420F SATELLITE SYS SURVIVABILITY	3	21,0,944	27,0,044	33,0,044	36,0,044	390	
56	63420F AC/CS SPACE APPLICATIONS PROGRAM	3	2,0,044	4,0,144	6,0,044	6,0,044	400	
57	62710F CCNUS TOWER-THREE HORIZON RADAR	3	11,0,944	11,0,900	12,0,044	14,0,244	404	
58	62710F CCNUS TOWER-THREE HORIZON RADAR	3	11,0,944	11,0,900	12,0,044	14,0,244	404	
59	64210F B-1	3	50,0,348	50,0,348	50,0,348	50,0,348	412	
60	64210F ECM/RCG DEFENSIVE SYSTEMS	3	1,0,348	1,0,348	1,0,348	1,0,348	412	
61	64310F P-X	3	15,0,044	67,0,044	105,0,044	135,0,044	419	
62	64710F 410 LAUNCHED CRUISE MISSILE	3	336,0,045	94,0,044	105,0,044	135,0,044	419	

DEPARTMENT OF THE AIR FORCE
FY 1981 RDT & E PROGRAM

APPROPRIATION: 3600 F RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE

Exhibit No 2

Dated 26 Jan 1981.

PROGRAM NO NUMBER	ITEM Nomenclature	ACT	FY 1979	FY 1980	THRU STATUS OF JUN 1981	FY 1981	Des. Sum. Pg.
63	64416F SPACE DEFENSE SYS	3	76,160	66,580	116,400	96,400	429
54	64711F SYSTEMS SURVIVABILITY (NUC EFFECTS)	3	11,570	14,200	23,900	13,020	465
65	66712F B-52 COMPANION TRAINER AIRCRAFT	3	71,900	96,290	142,400	11,7,500	456
66	11113F B-52 SQUADRONS	3	7,616	6,230	15,100	20,007	453
67	11118F SHORT RANGE ATTACK MSL (AGM-69)	3	6,610	1,100	23,600	27,0,400	495
68	11112F KC-135 SQUADRONS	3	6,610	1,100	900	300	499
69	11212F TITAN SQUADRONS	3	6,000	1,000	6,000	4,0,000	501
70	11213F MINUTEMAN SQUADRONS	3	5,1,000	35,300	46,000	7,0,200	515
71	11312F PCST ATTACK COMD/CNTL SYS	3	26,000	24,500	6,000	26,0,000	528
72	11316F SAC COMMUNICATIONS	3	14,000	17,000	23,000	22,0,000	535
73	12211F NORAD COC	3	7,499	5,000	9,700	2,0,000	539
74	12315F JOINT SURVEILLANCE SYSTEM	3	6,500	6,600	9,700	2,0,000	542
75	12411F SURVEILL RADAR STATIONS/SITES	3	6,2,00	11,0,00	6,500	4,0,500	545
76	12412F OEM RADAR STATIONS	3	2,070	5,000	6,200	0,0,700	551
77	12423F BALLISTIC MSL EARLY WNG SYSTEM	3	5,000	6,000	72,000	13,5,000	557
78	12474F SPACE TRACK	3	6,112	6,200	6,700	0,0,700	560
79	12471F DEFENSE SUPPORT PROGRAM	3	30,550	31,000	31,000	3,0,000	569
80	12472F SLRM RADAR WARNING SYSTEMS	3	4,691	4,200	4,200	0,0,000	573
81	12476F PERIMETER AGO RACAR-ATK CRASACT SYS	3	5,000	5,000	5,000	0,0,000	573
82	12451F SPACE DEFENSE OPS	3	1,0,500	1,0,500	1,0,500	0,0,000	573
83	37011F NMCCS ACFAABNCP	3	3,000	3,000	3,000	0,0,000	573
84	33111F MINIMUM ESSENTIAL EMER COMM NETWORK	3	7,3,00	8,500	13,5,00	26,0,900	573

DEPARTMENT OF THE AIR FORCE
FY 1981 R&D + E PROGRAM

EXHIBIT A-2

AIRPROPRIETARY LINE OF RESEARCH DEVELOPMENT TEST + EVAL. AIR FORCE

DATE 26 JAN 1980

PROG-EMN LINE ELEMENT AC NUMBER	ITEM Nomenclature	ACT	FY 1979		FY 1980		FY 1981		Des. Sum. PQ.
			-----	-----	-----	-----	-----	-----	
25 3761F	AIR FORCE SAT COMM SYS.	3	19,711	19,260	61,440	63,140	580		
66 35156F	SATELLITE DATA SYSTEM	3	23,130	26,330	45,330	27,940	587		
<hr/>									
STRATEGIC PROGRAMS									
63 63278F	NEXT GENERATION TRAINER ACFT	4		1,930	2,000	2,000	14,440	593	
69 63279F	COMBAT ACFT TECHNOLOGY	4	1,115	2,000	5,000	5,000	599		
91 63274F	ENFORCER AIRCRAFT	4		6,000					
91 63274F	ACFT NON-NUCLEAR SURVIVABILITY	4	1,550	700	1,300	1,300	603		
92 63269F	NIGHT ATTACK PROGRAM	4		25,000	74,000	74,000	74,000	607	
93 63268F	DEF SUPPRESSION WPNs AND TECH	4		5,000	5,000	5,000	5,000	619	
94 63311F	ACV WSL SUBSYSTEMS DEMONSTRATION	4	20,000	20,000	20,000	20,000	622		
95 63217F	THEATRE BALLISTIC MISSILE	4	10,000	27,000	25,000	4,000	626		
96 63375F	ACV MEDIUM RANGE AIR-TO-AIR RSL	4	11,000	34,000	25,000	50,000	637		
97 63419F	ACV ATTACK WEAPONS	4							
98 63161F	AIR-LAUNCHED ASSAULT BREAKER	4			7,000	7,000	7,000	646	
99 63716F	CCO PHYSICAL SECURITY EO-EXTERIOR	4	5,000	3,900	7,000	7,000	649		
100 63714F	ELECTRONIC WARFARE TECHNOLOGY	4	11,000	13,000	14,000	14,000	653		
101 63727F	ADVANCED COMMUNICATIONS TECHNOLOGY	4	9,000	3,700	4,000	5,000	659A		
102 63710F	ACV DRONE/REMOTE PILOTED VEH DEV	4	2,000	3,500	4,000	4,000	660		
103 63741F	DEFENSE SUPPRESSION (HI)	4	4,500						
104 63712F	AIR-TO-AIR IDENTIFICATION	4	4,000	5,000	10,700	10,700	663		
105 63746F	STC/LOCKING AIRBORNE RADAR	4		12,000	27,000	27,000	27,000	669	
106 63747F	PAVE MOSES	4	5,000	6,700	13,200	13,200	683		

DEPARTMENT OF THE AIR FORCE
FY 1991 RDT&E PROGRAM

APPENDIX I: RESEARCH & DEVELOPMENT TEST & EVAL AIR FORCE

Category 1

LINE ELEMENT NO.	ITEM NOMENCLATURE	ACT	FY 1991	FY 1990	FY 1991	FY 1992	Sum. PG.
108	6421F RDT&E AIRCRAFT EQUIPMENT DEVELOPMENT	4	7,100	12,600	17,000	42,700	689
109	6421F AIRCRAFT EQUIPMENT DEV	4	10,200	7,900	9,600	10,500	699
110	6421F ENGINE & GEAR DERIVATIVE PROG	4	2,900	3,900	4,600	2,600	705
111	6421F INTEGRATED DIGITAL AVIONICS	4	2,500	1,900	1,900	2,500	709
112	6421F NUCLEAR WEAPONS SUPPORT	4	1,100	1,000	1,600	1,100	713
113	6421F ARV HELICOPTER TRANSPORT	4	400	1,700	600	1,700	717
114	6421F C-141	4	6,500	6,500	6,500	6,500	721
115	6421F C-141 CO-PILOTING PROJ	4	1,100	1,100	1,100	1,100	1,100
116	6421F ARV MED KIT/GEAR-TO-4IP MSL	4	1,100	1,100	1,100	1,100	1,100
117	6421F GROUND LAUNCHED CRUISE MSL	4	33,100	60,930	67,500	33,600	725
118	6421F COMMON MULTIMODE CANAC	4	1,100	1,100	1,100	1,100	1,100
119	6421F C/B DEFENSE EQUIPMENT	4	5,000	3,600	7,000	6,600	735
120	6421F AMMUNITION ORDNANCE DEV/FLUGG	4	15,600	12,100	12,300	13,600	739
121	6421F LCH ALTITUDE AFLC ATTACK SYS	4	27,999	25,833	36,144	34,944	746
122	6421F WIND-FARSEA ANTI-APPROX MUNITION	4	24,636	24,514	17,714	17,714	750
123	6421F CLOSE AIR SUPPORT WEAPONS SYSTEM	4	58,455	61,030	47,130	46,130	759
124	6421F AFLC DELIVERED LAND MINES	4	6,300	4,000	4,000	500	779
125	6421F LCH LEVEL LASER GUIDED BOMBS	4	3,735	6,000	3,000	4,000	782
126	6421F COMMON NATO MUNITIONS	4	3,000	2,200	2,200	2,200	785
127	6421F GLIDER WARD STRUCTURES MUNITION	4	600	600	600	600	788
128	6421F AFLC LAUNCHED ASSAULT BRAKES	4	5,300	5,200	15,000	14,000	791
129	6421F LIFE SUPPORT SYSTEM	4	5,300	5,200	15,000	14,000	791

DEPARTMENT OF THE AIR FORCE
FY 1981 KDT + E PROGRAM

APPROPRIATION: 3610 F RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE

EXHIBIT K-1

DATE: 26 JAN 1980

PROGRAM LINE ELEMENT NO NUMBER	ITEM Nomenclature	ACT	FY 1979	FY 1980	FY 1981		FY 1982	Des. Sum. Pg.
					THOUSANDS OF DOLLARS	THOUSANDS OF DOLLARS		
130	64777F WEATHER SYSTEMS	4	10,424	9,944	5,644	5,544	5,544	794
131	64778F OTHER OPERATIONAL EQUIPMENT	4	9,300	7,800	10,800	10,800	10,800	797
132	64779F IMPROVED TACTICAL BOMBING	4	7,950	4,900	14,900	15,700	15,700	804
133	64780F RECON/ELECTRONIC WARFARE EQUIPMENT	4	9,600	10,200	29,800	29,100	29,100	810
134	64781F CCC PHYSICAL SECURITY EO-EXPERIENCE	4	2,765	11,944	15,744	16,644	16,644	814
135	64782F TAC C3 COUNTING-MEASURES	4	8,344	11,144	11,144	11,144	11,144	818
136	64783F ACFT IDENTIFICATION SYSTEMS	4	49,100	37,200	36,600	36,600	36,600	824
137	64784F SURFACE DEF SUPPRESSION	4	4,244	12,444	12,144	12,144	12,144	840
138	64785F AIRBORNE SELF-PROTECTION JAMMER	4	48,499	58,300	71,100	71,200	71,200	843
139	64786F PROTECTIVE SYSTEMS	4	33,513	14,244	24,600	25,300	25,300	856
140	64787F TACTICAL PROTECTIVE SYSTEMS	4	3,000	2,600	5,000	6,000	6,000	864
141	64788F APPF FOR INFO PROCESSING TECH	4	86,800	15,000	62,600	62,600	62,600	869
142	64789F PRECISION LOCATION STRIKE SYSTEM	4	5,790	4,744	5,600	5,600	5,600	892
143	64790F EXPENDABLE DRONES	4	12,981	18,300	16,600	15,000	15,000	896
144	64791F INTELLIGENCE EQUIPMENT	4	500	2,200	500	500	500	904
145	64792F INTRA-THEATRE IMAGING SYSTEM	4	10,300	71,600	71,600	87,200	87,200	907
146	64793F NATO AEW/C ACFT (HI)	4	41,700	54,600	2,600	2,500	2,500	915
147	64794F JT TAC INFO DISI SYS SPT	4	2,800	1,900	4,900	4,900	4,900	918
148	64795F SYSTEMS PROTECTION	4	4,325	1,300	1,300	1,300	1,300	
149	64796F JT INTEROPERABILITY TAC CCNC/CNTRL	4						

DEPARTMENT OF THE AIR FORCE
FY 1981 F O T + E PROGRAM

APPROPRIATION: TRAN & RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE

EXHIBIT A-1

DATE 20 JAN 1980

LINE ELEMENT NC NUMBER	ITEM NOMENCLATURE	ACT	FY 1979	FY 1981	FY 1982	Sum. P&G
151	27110F F-4 SQUADRONS	4	2,000.0	500.0	7,030.0	6,000.0 J 921
152	27111F F-111 SQUADRONS	4	100.0	1,400.0	7,000.0	6,000.0 J 925
153	27112F F-16 SQUADRONS	4	11,390.0	500.0	9,000.0	9,000.0 J 930
154	27121F F-117 SQUADRONS	4	17,955.0	17,000.0	13,600.0	5,000.0 J 940
155	27122F F-16 SQUADRONS	4	1,5,310.0	27,000.0	42,000.0	6,000.0 J 948
156	27123F TACTICAL AIM MISSILE	4	4,200.0	1,000.0	3,000.0	3,000.0 J 958
157	27124F TACTICAL AGM MISSILES	4	2,600.0	800.0	8,000.0	4,000.0 J 975
158	27227F TACTICAL SURVEILLANCE SYS	4	2.0	500.0	1,000.0	600.0 J 983
159	27228F EF-111 SQUADRONS	4	8,000.0	7,000.0	14,500.0	20,000.0 J 985
160	27411F OVERSEAS AIR WEAPON (INT) SYS	4			200.0	200.0 J 998
161	27612F TACTICAL AIR CONTROL SYSTEM	4			12,500.0	6,000.0 J 1001
162	27613F USEPA COMMAND/CONTROL SYS	4	5,000.0	10,000.0	6,000.0	6,000.0 J 1005
163	27617F TAC MIS/CRNE COMM GÖÖR SYS	4	37,000.0	52,000.0	65,000.0	60,000.0 J 1009
164	27733F ACV COMM SYS	4		12,000.0	4,000.0	25,000.0 J 1030
165	27734F TAC AIR INTELL SYS ACTYS	4	3,500.0	9,000.0	6,000.0	9,000.0 J 1038
166	27811F JT TACTICAL COMM PROG	4	29,000.0	28,000.0	10,700.0	23,000.0 J 1058
167	27812F C-2 LIFT/LIFT SQUADRONS (LIF) TACTICAL DRUGGARS	4	36,500.0	12,700.0	11,000.0	45,000.0 J 1072
		1,000.0	957,000.0	1,000.0	1,000.0	1,000.0 J 1072
168	27815F AIRFIELD GLOBAL POSITION SYS (H)	5	35,000.0			J
169	63711F MAP/CDS ARCHITECTURE	5	2,000.0	7,000.0	10,000.0	6,000.0 J 1079
170	14442F NAVSTAR SPACE CONSTL EQUIP	5	32,000.0			0 J
171	44714F TACTICAL LOC/NV (H)	5	3,000.0			J

DEPARTMENT OF THE AIR FORCE
FY 1981 R D F + E PROGRAM
APPROPRIATION: 2610 F RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE

EXHIBIT A-1

DATE 26 JAN 1981

PROJECT LINE ELEMENT NO. NUMBER	ITEM Nomenclature	ACT	FY 1979	FY 1980	THOUSANDS OF DOLLARS		Cust. F-11
					FY 1981	FY 1982	
172 56770F NAVSTAR GPS	5	8,200	159,100	126,750	121,000	116,500	E
173 6577AF AIRCRAFT NAVIGATION SYS VERIF	5	1,700	1,300	2,000	1,600	1,600	S
175 31127F FOREST GREEN	5	1,775	3,125	27,075	24,950	10,700	
177 34771F DEFENSE DISSEMINATION PROGRAM	5	8,049	3,224	9,044	14,100	10,999	
179 37111F TEF SATELLITE COMM SYS	5	34,200	22,837	21,100	16,500	11,033	
179 33126F LONG-Haul COMMUNICATIONS (LHCS)	5	5,540	8,000	11,400	9,900	11,119	
180 33146F ELECTROMAG COMPATIBILITY ANAL CIR	5	5,565	5,600	6,000	6,000	11,766	
181 37111F COMMUNICATIONS SECURITY	5	1,100	1,100	1,000	1,000	1,000	
182 35114F TRAFFIC CONTROL/APPACH/LANDING SYS	5	2,848	4,200	3,100	6,200	6,200	
184 35111F SUBJECT PROGRAM	5	11,901	8,200	6,622	5,000	5,000	
INTELLIGENCE AND COMMUNICATIONS		305,622	669,396	916,506	905,246		
185 63111F DEVELOPMENT PLANNING	6	1,000	1,100	2,000	4,000	4,000	
186 63211F ADV AERIAL TARGET FCG	6	3,471	1,500	1,500	1,500	1,500	
187 63411F SPACE VEHICLE SURSYSTEMS	6	9,660	9,500	12,000	13,070	11,111	
188 63411F SPACE TEST PROGRAM	6	44,800	34,400	53,900	77,500	11,488	
189 63111F SPACE SHUTTLE	6	169,600	206,900	700	700	700	
190 63770F WEATHER SYSTEMS	6						
191 64211F ACV AERIAL TARGETS DEV	6	8,007	16,500	16,900	16,900	16,900	
192 64211F FLIGHT SIMULATOR DEVELOPMENT	6	11,835	6,000	17,300	21,600	21,600	
193 64211F ACFT ENGINE COMPONENT IMPROVÉ PROG	6	8,000	10,500	10,500	10,500	10,500	

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DEPARTMENT OF THE AIR FORCE
FY 1981 KUT-E PROGRAM

EXHIBIT K-1

APPROPRIATION: 1600 RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE

DATE 28 JAN 1980

PROGRAM LINE ELEMENT NO. NUMBER	ITEM Nomenclature	THOUSANDS OF DOLLARS			Drs. Sum. PQ
		ACT	FY 1979	FY 1980	
194	64411F SPACEL SHUTTLE	6	-----	433,100	187,000 J 1187
195	64711F IMPROVED CAPABILITY FOR OCE	6	14,740	12,700	28,300 U 1199
196	64721F FOREIGN WEAPONS EVALUATION (HI)	6	2,010	-----	-----
197	64747F ELECTROMAG RADIATION TEST FACIL	6	16,725	10,600	30,340 U 1204
198	6E1-1F PROJECT AIR FORCE	6	11,000	11,700	12,500 U 1208
199	651-4F ACQ/CMD SFT (ACCS) - TELECOM	6	3,874	3,900	4,400 U 1213
200	659-6F ACQUISITION AND COMMAND SFT	6	211,970	211,364	237,000 U 1216
201	659-7F TEST AND EVALUATION	6	286,752	292,075	315,200 U 1233
202	659-8F ACV SYS ENGINEERING/PLAN	6	6,000 J	4,200	5,000 U 1247
203	65900F MGT HQ (RESEARCH/DEVELOPMENT)	6	19,030	17,751	23,199 U 1251
204	35110F SATELLITE CONTROL FACILITY	6	8,199	14,700	14,400 U 1254
205	35119F SPACE BOOSTERS	6	32,600	29,700	16,000 U 1258
206	35119F CONSOLIDATED SPACE OPERATIONS CENTER	6	-----	13,780	9,400 U 1265
207	35119F DEF METEOROLOGICAL SATELLITE PROG	6	12,500	15,900	19,000 U 1268
208	75171F SPACE LAUNCH SUPPORT	6	-----	3,433	3,500 U 1275
209	7A019F HILL/WENDOVER/DUGWAY RANGE	6	-----	1,740	1,000 U 1276
210	7A026F PRODUCT RELIABLE/AIRAIL/MAINTAIN PROG	6	3,020	5,900	8,592 U 1281
211	01014F INTERNATIONAL ACTIVITIES	6	1,275	1,900	1,970 U 1286
	DEFENSEWIDE MISSION SUPPORT		878,033	906,596	1,234,015 U 1,243,059
		-----	-----	-----	-----
	TOTAL RESEARCH DEVELOPMENT TEST + EVAL, AIR FORCE	4,358,000	5,026,032	7,005,384	6,166,704

Research, Development, Test and Evaluation, Air Force

Section 3 - Performer Distribution

	<u>FY 1979 Program Actual</u>	<u>FY 1980 Program Requirements</u>	<u>FY 1981 Program Requirements</u>	<u>FY 1982 Program Requirements</u>
1. For operation of installations of the reporting Service <u>Government operated</u>	682,002	693,707	756,098	794,753
2. For operation of installations of the reporting Service <u>Contractor operated</u>	118,884	128,990	137,848	143,680
3. For contracts <u>directly in support</u> of work performed at installations of the reporting Service	83,338	82,000	85,000	90,000
4. For work assigned to other Department of Defense activities	67,127	73,380	98,100	103,600
5. For work assigned to activities of other Government agencies	6,392	6,500	6,800	7,000
6. For work performed by industrial contractors ("profit" organizations)	3,107,776	3,711,664	5,629,090	6,565,475
7. For work performed by educational institutions				
a. <u>Designated Federal Contract Research Centers</u>	44,356	55,777	65,819	72,648
b. <u>Other Institutions</u>	122,600	138,600	151,800	151,800
8. For work performed by other "non-profit" organizations	126,413	135,414	154,745	171,948
Total Research, Development, Test and Evaluation Appropriation	4,358,888	5,026,032	7,085,300	8,100,704

Research, Development, Test and Evaluation, Air Force

Section 4 - Installation Analysis

This installation analysis shows dollar and manpower resources utilized by Air Force installations in the accomplishment of in-house research, development, test and evaluation efforts, including contractor operated installations, under the management control of the Air Force. Installations reported include those classified as research, development, or test installations as well as support costs. Funds reported cover both direct and indirect costs as well as support costs. Amounts listed under the category "RDT&E Funds" include funds received directly and reimbursable RDT&E effort performed for other Air Force activities and other Department of Defense agencies. "All Other Funds" show in-house effort for other than Research, Development, Test and Evaluation, and Military Personnel costs. Military Personnel costs include those military personnel assigned to RDT&E activities.

Personnel data is reported in terms of man years rather than the number of personnel man years include both those charged directly to the RDT&E appropriation and to reimbursable activities. Contractor personnel shown are engaged in the operation of Air Force installations.

INSTALLATION ANALYSIS

INDEX

Item No.

IN-HOUSE INSTALLATIONS

<u>Item No.</u>	<u>Installation</u>	<u>Page No.</u>
1.	Defense Research Sciences (Laboratory Support at Various Locations).	28
2.	Geophysics Laboratory, Hanscom AFB, Massachusetts.	28
3.	Materials Laboratory, Wright-Patterson AFB, Ohio.	28
4.	Aerospace Flight Dynamics Laboratory, Wright-Patterson AFB, Ohio.	28
5.	Aerospace Biotechnology, Brooks AFB, Texas.	28
6.	Aerospace Propulsion Laboratory, Wright-Patterson AFB, Ohio.	28
7.	Aerospace Avionics Laboratory, Wright-Patterson AFB, Ohio.	28
8.	Rocket Propulsion Laboratory, Edwards AFB, California.	29
9.	Advanced Weapons Laboratory, Kirtland AFB, New Mexico.	29
10.	Armament Laboratory, Eglin AFB, Florida.	29
11.	Command, Control & Communications Center, Griffis AFB, New York.	29
12.	Human Resources Laboratory, Lackland AFB, Texas.	29
13.	Electromagnetic Compatibility Analysis Center, Annapolis, Maryland	29
14.	Aeronautical Systems Division, Wright-Patterson AFB, Ohio.	29
15.	Electronic Systems Division, Hanscom AFB, Massachusetts.	30
16.	Space Division, Los Angeles AFS, California.	30
17.	Ballistic Missile Office, Norton AFB, California.	30
18.	Aerospace Medical Division, Brooks AFB, Texas.	30
19.	Headquarters Air Force Systems Command, Andrews AFB, Maryland.	30
20.	Arnold Engineering Center, Tullahoma, Tennessee.	30
21.	Armament Development Test Center, Eglin AFB, Florida.	30
22.	Air Force Flight Test Center, Edwards AFB, California.	31
23.	4950th Test Wing, Wright-Patterson AFB, Ohio.	31
24.	SHAPE Technical Center, The Hague, Netherlands.	31

Item No.

FEDERAL CONTRACT RESEARCH CENTERS

25.	Aerospace Corporation, Los Angeles, California	32
26.	Lincoln Laboratory, Lexington, Massachusetts.	32
27.	MITRE Corporation, Bedford, Massachusetts.	32
28.	Rand Corporation, Santa Monica, California	33

Page No.

INSTALLATION ANALYSIS - IN-HOUSE

Item No.	Installation & Location	FY	TOA (\$ in Thousands)				PERSONNEL (Man-Years)							
			RDTE Funds		All Other Funds		Mil Pers.	Total	Civil Service		Contractor		Mil Pers.	TOTAL
			Dept of Air Force	Other Parent Dept	Other DOD	All Other Funds			Paid From Parent Dept	Paid From Other	Paid From RDTE	Paid From Other		
1. Defense Research	79	3,856	8	14		3,878	1,535	5,413	102				69	171
Sciences, Various	80	4,121	15	15		4,136	1,605	5,741	102				69	171
Locations	81	4,402	15	15		4,417	1,603	6,020	102				69	171
2. Geophysics Laboratory, L.G. Hanscom AFB, MA	79	16,500	6,544	401	112	23,557	1,848	25,405	494				114	608
	80	16,600	5,989	509	216	23,314	1,903	25,217	475				112	587
	81	18,100	5,357	509	239	24,205	1,924	26,129	475				111	586
3. Materials Laboratory, Wright-Patterson AFB, OH	79	13,500	3,465	261	5	17,231	1,254	18,485	412				53	465
	80	13,300	3,444	256	10	17,010	1,284	18,294	390				52	442
	81	16,200	3,636	275	10	18,121	1,305	19,426	390				52	442
	82	16,400	3,636	275	10	18,321	1,310	19,631	390				52	442
4. Aerospace Flight Dynamics Lab Wright-Patterson AFB, OH	79	24,933	7,569	215	591	33,308	4,457	37,765	776	10			213	999
	80	25,500	7,763	527	200	33,990	4,529	38,619	805	10			210	1025
	81	27,100	7,248	307	66	34,721	4,694	39,415	805	10			209	1024
	82	27,500	7,248	307	66	35,121	4,714	39,835	800	10			209	1019
5. Aerospace Biotechnology, Brooks AFB, TX	79	16,489	1,069	274	308	18,140	8,698	26,838	478				553	1031
	80	17,329	1,111	180	145	18,765	9,117	27,882	450				552	1002
	81	18,000	1,380	11	107	19,498	9,267	28,765	450				551	1001
	82	18,200	1,380	11	107	19,698	9,191	29,889	450				546	996
6. Aerospace Propulsion Lab, Wright-Patterson AFB, OH	79	12,800	3,898	12	10	16,720	1,137	17,857	419	1			49	469
	80	13,200	3,716	16,916	1,165	16,916	1,165	18,081	389	1			48	438
	81	14,200	4,047	18,247	1,187	18,447	1,187	19,634	389	1			48	438
	82	14,400	4,047	18,447	1,187	18,447	1,187	19,634	389	1			48	438
7. Aerospace Avionics Lab, Wright-Patterson AFB, OH	79	20,402	8,390	119	29	28,940	4,052	32,992	793				175	968
	80	21,400	6,713	76	28,389	4,209	32,598	820					175	995
	81	23,200	6,342	76	29,618	4,277	33,895	820					175	995
	82	23,500	6,342	76	29,918	4,294	34,212	818					175	993

INSTALLATION ANALYSIS - IN-HOUSE

TOA (\$ In Thousands)									
Item No.	Installation & Location	FY	RDT&E Funds			All Other Funds	Sub-Total	Mil Pers	TOTAL
			Dept of Air Force	Other Parent Dept	Other DOD				
8.	Rocket Propulsion Lab, Edwards AFB, CA	79 80 81 82	9,872 9,360 9,900 10,000	1,434 2,014 1,543 1,543	70 5 6 6	11,376 11,319 11,449 11,549	3,023 3,174 3,212 3,226	14,399 14,493 14,661 14,775	250 249 246 244
9.	Advanced Weapons Lab, Kirtland AFB, NM	79 80 81 82	11,192 11,300 12,200 12,400	25,001 21,604 22,548 22,548	3,910 3,231 3,050 3,050	1,389 2,045 2,230 2,230	41,492 38,180 40,028 40,228	13,339 13,812 14,024 14,041	523 470 54,052 54,269
10.	Armament Laboratory, Eglin AFB, FL	79 80 81 82	10,300 9,400 9,900 10,300	8,879 7,512 5,115 5,115	1,870 201	21,049 17,113 15,015 15,415	3,351 3,480 3,496 3,511	24,400 20,393 18,511 18,926	370 386 386 384
11.	Command, Control & Communications Center, Griffiss AFB, NY	79 80 81 82	23,926 25,132 26,800 27,200	12,835 15,072 14,744 14,744	2,049 3,339 2,055 2,055	47 56 56 56	38,857 43,599 43,655 44,055	43,114 4,447 4,519 48,592	1,052 1,049 1,049 1,043
12.	Human Resources Laboratory, Lackland AFB, TX	79 80 81 82	7,017 8,084 8,700 9,400	1,170 965 1,192 1,192		8,187 9,049 9,892 10,592	2,285 2,123 2,152 2,161	10,472 11,172 12,046 12,753	266 240 238 238
13.	Electro-magnetic Compatibility Analysis Cntr, Annapolis, MD	79 80 81 82	5,365 5,600 6,000 6,600	2,300 2,700 3,000 3,300	3,400 4,500 6,100 7,200	3,286 3,500 3,600 4,200	16,351 16,300 18,700 21,300	140 141,491 142,462 211,443	40 40 40 40
14.	Aeronautical Systems Division, Wright-Patterson, OH	79 80 81 82	93,178 92,005 97,767 100,759	8,000 8,100 8,200 8,200	400 400 400 400	7,000 7,000 7,000 7,000	108,578 107,505 113,367 116,369	33,264 35,732 143,257 37,172	141,842 143,257 150,628 153,541
									3,229 3,187 3,222 3,245
									314 338 318 293
									375 375 375 375
									179 195 217 217
									8 8 8 8
									602 632 640 640
									1,585 1,637 1,670 1,694
									5,128 5,162 5,210 5,194

Item No.	Installation & Location	FY	Civil Service				Personnel (Man-Years)			
			Paid From Parent Dept RDT&E	Paid From Other Dept RDT&E	Paid From Other Other RDT&E	Contractor	Mil Pers	In House Work	Mil Pers	Total
8.	Rocket Propulsion Lab, Edwards AFB, CA	79 80 81 82	9,872 9,360 9,900 10,000	1,434 2,014 1,543 1,543	70 5 6 6	11,376 11,319 11,449 11,549	3,023 3,174 3,212 3,226	14,399 14,493 14,661 14,775	250 249 246 244	5 5 5 5
9.	Advanced Weapons Lab, Kirtland AFB, NM	79 80 81 82	11,192 11,300 12,200 12,400	25,001 21,604 22,548 22,548	3,910 3,231 3,050 3,050	1,389 2,045 2,230 2,230	41,492 38,180 40,028 40,228	13,339 13,812 14,024 14,041	523 470 54,052 54,269	5 5 5 5
10.	Armament Laboratory, Eglin AFB, FL	79 80 81 82	10,300 9,400 9,900 10,300	8,879 7,512 5,115 5,115	1,870 201	21,049 17,113 15,015 15,415	3,351 3,480 3,496 3,511	24,400 20,393 18,511 18,926	370 386 386 384	5 5 5 5
11.	Command, Control & Communications Center, Griffiss AFB, NY	79 80 81 82	23,926 25,132 26,800 27,200	12,835 15,072 14,744 14,744	2,049 3,339 2,055 2,055	47 56 56 56	38,857 43,599 43,655 44,055	43,114 4,447 4,519 48,592	1,052 1,049 1,049 1,043	25 25 25 25
12.	Human Resources Laboratory, Lackland AFB, TX	79 80 81 82	7,017 8,084 8,700 9,400	1,170 965 1,192 1,192		8,187 9,049 9,892 10,592	2,285 2,123 2,152 2,161	10,472 11,172 12,046 12,753	266 240 238 238	5 5 5 5
13.	Electro-magnetic Compatibility Analysis Cntr, Annapolis, MD	79 80 81 82	5,365 5,600 6,000 6,600	2,300 2,700 3,000 3,300	3,400 4,500 6,100 7,200	3,286 3,500 3,600 4,200	16,351 16,300 18,700 21,300	140 141,491 142,462 211,443	40 40 40 40	5 5 5 5
14.	Aeronautical Systems Division, Wright-Patterson, OH	79 80 81 82	93,178 92,005 97,767 100,759	8,000 8,100 8,200 8,200	400 400 400 400	7,000 7,000 7,000 7,000	108,578 107,505 113,367 116,369	33,264 35,732 143,257 37,172	141,842 143,257 150,628 153,541	3,229 3,187 3,222 3,245
									314 338 318 293	
									375 375 375 375	
									179 195 217 217	
									8 8 8 8	
									602 632 640 640	
									1,585 1,637 1,670 1,694	
									5,128 5,162 5,210 5,194	

INS. ALIATIION ANALYSIS - IN-HOUSE

Item No.	Installation & Location	TOA (\$ In Thousands)										PERSONNEL (Man-Years)												
		ADTIE Funds			All Other Funds			Sub-Total			Mil Pers.			Civil Service			Contractor			Mil Pers.				
		Dept	Other	Air Force	Parent Dept	Other	DDO	Dept	Other	DDO	Dept	Other	DDO	Dept	Other	DDO	Dept	Other	DDO	Dept	Other			
15.	Electronic Systems Division, L.G. Hanaco, AFB, MA	79	48,281	1,500	3,500	53,281	30,045	83,326	1,542	130	1,431	3,103	80	48,447	1,500	3,500	53,447	32,292	65,739	1,479	1,479	3,172		
16.	Space Division, Los Angeles, CA	79	38,662	5,000	400	44,062	23,607	67,669	848	2	1,126	1,974	81	32,108	5,000	400	37,108	23,372	62,880	873	1,162	2,037		
		81	26,392	5,000	400	41,792	26,443	68,235	906	2	1,185	2,093	82	37,543	5,000	400	42,543	26,380	69,323	902	1,175	2,079		
17.	Ballistic Missile Office, Norton AFB, CA	79	-	5,000	-	-	6,438	6,438	241	307	548	598	80	5,000	5,000	6,919	11,919	291	307	598	307			
		81	7,500	100	200	12,630	6,009	18,639	178	293	1,162	2,037	82	7,747	100	200	12,761	7,212	14,712	7,195	1,162	2,037		
18.	Aerospace Medical Division, Brooks AFB, TX	79	12,330	100	200	18,655	51,857	773	286	464	286	464	80	12,461	100	200	13,670	6,491	20,161	183	286	464		
		81	13,370	100	200	14,315	6,475	20,790	183	286	464	286	82	14,015	100	200	13,670	6,491	20,161	183	286	464		
19.	Headquarters AF Systems Command, Andrews AFB, MD	79	30,002	2,500	700	33,202	18,655	51,857	773	25	836	1,634	80	29,775	2,500	700	32,766	19,930	52,696	806	858	1,669		
		81	34,362	2,500	700	37,562	20,394	57,956	812	25	862	1,699	82	41,135	2,500	700	37,562	20,394	57,956	812	861	1,699		
20.	Arnold Engineering Development Center, Tullahoma, TN	79	87,346	31,027	1,355	4,336	124,536	985	125,551	133	3,085	76	3,294	80	93,775	36,795	2,214	4,479	137,263	1,002	138,265	129		
		81	105,050	41,135	2,776	2,912	151,813	1,033	152,906	130	3,155	82	3,366	82	111,080	45,074	2,663	2,806	161,673	1,037	162,660	130	3,120	82
21.	Armament Division, Eglin AFB, FL	79	101,444	32,210	1,819	909	136,382	47,188	183,570	2,525	149	1,157	3,579	80	99,528	34,696	2,369	1,851	137,708	48,568	186,346	2,493	148	7,328
		81	107,098	39,188	2,394	1,197	149,877	50,128	200,005	2,525	148	1,180	3,505	82	115,725	42,143	2,394	1,197	161,748	50,128	200,005	2,515	148	7,315

INSTALLATION ANALYSIS - IN-HOUSE

Item No.	Installation & Location	TOA (\$ In Thousands)						PERSONNEL (Man-Years)					
		RDT&E Funds			All Other Funds			Mil Pers			Contractor Mil Pers		
		Dept of Air Force	Other Dept	DOD	All Other Funds	Sub-Total	Mil Pers	Total	Paid From Parent	Paid From Other Dept	Paid From RDT&E	In RDT&E	Mil Pers
22.	AF Flight Test Center, Edwards AFB, CA	79	70,116	13,972	8,826	1,595	94,509	45,336	139,845	1,469	100	3,508	5,077
		80	71,600	16,691	7,135	1,448	96,874	46,116	142,990	1,415	100	3,303	4,818
		81	71,140	22,383	5,282	1,752	100,557	47,529	147,986	1,366	100	3,328	4,794
		82	78,430	24,403	5,507	918	109,258	47,723	156,981	1,363	100	3,342	4,805
23.	4950th Test Wing Wright-Patterson AFB, OH	79	36,399	14,166	932	914	50,411	10,842	61,253	906	11	840	1,757
		80	31,500	16,355	879	1,385	56,120	11,029	67,149	925	11	841	1,777
		81	41,460	21,696	624	1,233	65,013	11,366	76,379	942	11	841	1,794
		82	44,510	23,180	624	226	69,140	11,412	80,552	929	11	841	1,781
24.	SHAPE Technical Center, The Hague, Netherlands	79	1,275		1,275		1,275		19			19	
		80	1,900		1,900		1,900		22			22	
		81	1,978		1,978		1,978		22			22	
		82	1,982		1,982		1,982		22			22	
GRAND TOTAL, IN-HOUSE		79	693,187	191,037	26,427	25,331	935,982	271,745	1,207,727	17,838	777	4,617	179
		80	704,356	200,341	25,836	26,469	957,002	284,297	1,241,299	17,754	800	4,710	195
		81	761,192	217,754	23,880	25,202	1,028,028	293,310	1,321,338	17,825	775	4,707	217
		82	799,281	229,152	25,092	23,855	1,077,380	293,574	1,370,954	17,825	725	4,692	217

INSTALLATION ANALYSIS - FCRCs

Item No.	FCRC & Location	FY	TOA (\$ in Thousands)						Personnel 17						Support				
			RDT&E Funds			All Other Funds			Sub-Mil Total Pers.			Professional 2/			Paid From RDT&E				
			Dept	Other	Parent Dept	All Other DOD	Other	Funds	Sub-Mil	Total	Mil Pers.	Dept	Paid From RDT&E	Paid From Other	Paid From Parent	Paid From RDT&E	Paid From Other	Mil Pers.	Total
25.	AEROSPACE CORP., LOS ANGELES, CA	79	76,866	0	10,953	36,314	124,133	0	124,133	326	120	386	752	139	351	2,544	2,544		
			80,948	0	14,651	52,933	148,532	0	148,532	332	154	555	724	134	483	2,882			
			94,323	0	13,575	73,099	180,997	0	180,997	950	146	731	824	127	636	3,414			
			82	102,945	0	12,336	84,540	199,821	0	199,821	965	111	780	840	96	579	3,471		
26.	LINCOLN LAB, ILEX MA	79	25,815	0	32,750	7,377	65,942	0	65,942	306	367	42	517	619	71	0	1,922		
			80	25,840	0	32,576	10,369	68,785	0	68,785	306	356	53	517	601	89	0	1,922	
			81	29,024	0	34,150	10,090	73,264	0	73,264	313	346	56	528	584	95	0	1,922	
			82	32,713	0	36,147	10,270	79,130	0	79,130	352	307	56	540	572	95	0	1,922	
27.	MITRE CORP., BEDFORD MA	79	46,801	0	20,685	7,864	75,350	0	75,350	672	249	89	672	249	89	0	2,020		
			80	58,602	0	30,330	6,498	95,430	0	95,430	750	274	96	750	274	96	0	2,240	
			81	70,145	0	37,686	10,383	118,214	0	118,214	300	270	106	800	270	106	0	2,352	
			82	77,048	0	41,862	9,213	128,123	0	128,123	836	295	102	836	295	102	0	2,466	

INSTALLATION ANALYSIS - FCRCS

Item No.	FCRC & Location	FY	TOA (\$ in Thousands)						Personnel 1/						Support			
			RDT&E Funds			All Other Funds			MIL Pers			Professional 2/			Paid From Parent			
			Dept of Air Force	Other Parent Dept	Other DOD	All Other Funds	Other Funds	Total	MIL Pers	Total	MIL Pers	Other RDTE	RDTE	Paid From Parent	Paid From Parent	Paid From Parent	MIL Pers	Total
28.	PROJECT	79	11,000	0	0	0	11,000	0	11,000	0	146	0	0	146	0	0	0	292
	AIR FORCE																	
	RAND	80	11,700	0	0	0	11,700	0	11,700	0	146	0	0	146	0	0	0	292
	CORP.	81	12,500	0	0	0	12,500	0	12,500	0	146	0	0	146	0	0	0	292
	SANTA MONICA, CA	82	13,500	0	0	0	13,500	0	13,500	0	148	0	0	148	0	0	0	296
	GRAND TOTAL FCRCS	80	160,482	0	64,388	51,555	276,425	0	276,425	1,950	736	517	2,387	977	511	0	0	6,778
		81	205,992	0	85,411	93,572	384,975	0	384,975	2,209	762	893	2,296	981	337	0	0	7,980
		82	226,206	0	90,345	104,023	420,574	0	420,574	2,301	713	912	2,364	963	876	0	0	8,155

1/ Shown in manyears.

2/ Defined as members of technical staff in contracts with these institutions.

Research, Development, Test and Evaluation, Air Force

Section 5 - Analysis of Reimbursable Program

<u>Customer</u>	(\$ in Thousands)		
	<u>FY 1979 Actual</u>	<u>FY 1980 Estimate</u>	<u>FY 1981 Estimate</u>
<u>Department of the Air Force</u>	129,724	146,422	155,045
<u>Other Department of Defense Components</u>			
Department of the Army	53,063	60,047	63,583
Department of the Navy	56,267	63,280	67,007
Defense Nuclear Agency	1,000	924	978
Other Department of Defense Components	40,878	45,728	48,421
<u>Activities Outside Department of Defense</u>			
National Aeronautics and Space Administration	58,184	65,590	69,452
Other	29,774	33,719	35,704
Trust Funds (Foreign Military Sales)	36,809	41,571	44,019
Non-Federal Sources	3,742	4,619	4,891
<u>Total Reimbursements</u>	409,441	461,900	489,100

ANALYSIS OF REIMBURSABLE PROGRAM

Orders are received from other Air Force appropriations, the Security Assistance Program, and other activities outside the Department for RDT&E efforts for special tests conducted at various test centers and laboratories. Major requirements are:

- a. Army - Support of low cost laser seeker; Cobra Judy; wind tunnel aerodynamic testing of projectiles and missile systems; vacuum chamber testing, purchase of miniature cathode ray tubes.
- b. Navy - Support of aircraft simulation studies; cruise missile integration; support requirements of the Navy Medical Research Institute (NMRI) Toxicology Det; Advance Signal processing for Future Satellite Communications Systems.
- c. DNA - Contract Management, TDY and Nosetip test support; materials testing in support of the M-X program; in-house support in predicting and assessing the effects of low dose radiation.
- d. Other DoD Components - Provide support and services for Defense Intelligence Agency; Defense Supply Agency; Defense Communications Agency; and Defense Mapping Agency.
- e. NASA - Use of AF Plant 42, Palmdale; TDY and Stock Funded Propellants; sensor testing and rocket altitude firing of various motors.
- f. Other - Support to Environmental Protection Agency; Environmental Research Development Agency; NATO AENC; FAA Simulated Microwave Landing System.
- g. Trust Funds (Foreign Military Sales) - For support of satellite launching, tracking, range support, management services and administrative expense, for FMS customers on a reimbursable basis.
- h. Non-Federal Sources - For support of utilities, printing, civil engineering, communications, wind tunnel testing and similar services for commercial customers.

Section 6 - Federal Contract Research Centers

Federal Contract Research Centers (FCRCs) are organizations primarily engaged in providing independent, specialized technical and scientific support necessary to supplement resources available within the Department of Defense and assist the Air Force in the planning, development, and execution of Research, Development, Test and Evaluation programs as well as programs financed by other Air Force appropriations. Amounts included in this request are specifically identified by FCRC, appropriation, and program. The estimate for the Air Force portion of the work allocated to FCRCs totals \$319,657,000 and \$354,254,000 in FY 1981 and FY 1982 respectively.

The Air Force is designated the cognizant component for Aerospace, Lincoln Laboratory, MITRE C3 Division and the Project AIR FORCE portion of The Rand Corporation. Work performed by these FCRCs is carefully managed in accordance with guidelines approved by the Under Secretary of Defense for Research and Engineering. The FCRCs are controlled to ensure that the work is appropriate for an FCRC, that their work does not duplicate that of others and that they directly support the requirements of the Department of Defense.

A detailed tabulation of the Federal Contract Research Center programs follows.

SUMMARY OF FEDERAL CONTRACT RESEARCH CENTERS BY APPROPRIATION
 (\$ In Thousands)

	<u>FY 1979 ACTUALS</u>	<u>FY 1980 ESTIMATE</u>	<u>FY 1981 ESTIMATE</u>	<u>FY 1982 ESTIMATE</u>
Aerospace Corporation				
RDT&E	76,866	80,948	94,323	102,945
Missile Procurement	7,691	20,432	24,187	15,932
Other Procurement	25,077	28,233	40,434	48,443
Operations & Maintenance	3,546	<u>4,268</u>	<u>8,478</u>	<u>20,165</u>
Total Aerospace Corporation	(1) 113,180	(2) 133,881	(2) 167,422	(2) 187,485
Lincoln Laboratory				
RDT&E (3)	40,985	44,021	49,217	56,938
Other Procurement	920	1,000	1,248	1,305
Operations & Maintenance	<u>6,457</u>	<u>9,369</u>	<u>8,842</u>	<u>8,965</u>
Total Lincoln Laboratory	<u>48,362</u>	<u>54,390</u>	<u>59,307</u>	<u>67,208</u>
MITRE Corporation				
RDT&E	46,801	58,602	70,145	77,048
Aircraft Procurement	0	0	450	0
Other Procurement	3,139	3,246	7,357	7,930
Operations & Maintenance	<u>4,725</u>	<u>3,252</u>	<u>2,576</u>	<u>1,283</u>
Total MITRE Corporation	<u>54,665</u>	<u>65,100</u>	<u>80,528</u>	<u>86,261</u>
Rand Corporation				
RDT&E	<u>11,000</u>	<u>11,700</u>	<u>12,500</u>	<u>13,500</u>
Total Rand Corporation	<u>11,000</u>	<u>11,700</u>	<u>12,500</u>	<u>13,500</u>

SUMMARY OF FEDERAL CONTRACT RESEARCH CENTERS BY APPROPRIATION
(\$ In Thousands) CONTINUED

	<u>FY 1979 ACTUALS</u>	<u>FY 1980 ESTIMATE</u>	<u>FY 1981 ESTIMATE</u>	<u>FY 1982 ESTIMATE</u>
Total Program Summary by				
Appropriation	175,652	185,271	226,185	250,431
RDT&E	7,691	20,432	24,187	15,932
Missile Procurement	0	0	450	0
Aircraft Procurement	29,136	32,479	49,039	57,678
Other Procurement	14,728	16,889	19,896	30,413
Operations & Maintenance			319,757	354,454
Total FCRCs	<u>227,207</u>	<u>255,071</u>		

(1) Includes approximately \$7,150,000 not subject to FCRC limitations (outside contracts, flow through costs, etc.)

(2) Excludes approximately \$9,200,000 not subject to FCRC limitations (outside contracts, flow through costs, etc.)

(3) Includes subcontracts

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
Aerospace Corporation

RDT&E APPROPRIATION	(\$ In Thousands)			
	FY 1979 ACTUALS	FY 1980 ESTIMATE	FY 1981 ESTIMATE	FY 1982 ESTIMATE
12311F NORAD COC/SPADOC	0	500	2,800	3,350
12431F Defense Support Program	7,349	0	949	5,611
31060F Defense Dissemination Program	2,772	1,850	2,185	2,190
33110F DSCS	3,799	3,890	2,380	60
33601F AF SATCOM/SSS	2,449	3,300	4,300	5,600
34111F Special Activities	5,910	8,253	8,720	7,613
35119F Space Boosters	1,629	1,713	1,430	900
35160F DMSP	300	1,100	1,025	1,675
61102F Defense Research Sciences (AFOSR)	50	55	50	50
62102F Materials (AFML)	130	20	70	25
62302F Rocket Propulsion (AFRPL)	260	198	186	75
62601F Advanced Weapons (AFWL)	637	800	1,170	1,170
63002F HAVE MELLON	360	900	1,750	2,000
63009F Strat Dev Special Prog A	1,164	1,200	3,010	3,280
63305F Adv ICBM Tech	71	0	0	0
63311F ABRES	12,093	6,642	375	405
63317F Theatre Ballistic Missile	571	600	0	0
63401F Space Vehicle Subsystem	921	855	900	1,008
63402F Space Test Program	3,728	5,133	6,300	7,056
63411F Space Shuttle	10,225	15,413	0	0
63421F NAVSTAR GPS	5,272	0	0	0
63424F Missile Surveillance	425	1,100	3,000	3,360
63428F Space Surveillance Tech	3,002	5,000	2,800	3,350
63431F Space Communications	1,400	450	1,200	1,500
63438F Satellite Systems Survivability	3,996	3,750	4,850	4,950
63439F Adv Space Applications Program	0	400	440	492
63605F Adv Radiation Tech (AFWL)	190	100	0	0
M-X	0	165	0	0

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
Aerospace Corporation (CONTINUED)

		(\$ In Thousands)		
		FY 1979 ACTUALS	FY 1980 ESTIMATE	FY 1981 ESTIMATE
		<u>RDT&E APPROPRIATION (Continued)</u>		
64406F	Space Defense System	3,275	6,000	7,300
64411F	Space Transportation System	0	0	23,314
64411F	Systems Survivability (AFWL)	0	206	245
64424F	Precision Location Strik Sys (ASD)	388	848	980
644778F	NAVSTAR User Equipment	1,500	9,257	10,194
65808F	Adv Sys Eng/Plan	<u>3,000</u>	<u>1,250</u>	<u>2,400</u>
	TOTAL RDT&E	76,866	80,948	94,323
	MISSILE PROCUREMENT APPROPRIATION			
12431F	Defense Support Program	701	9,399	11,574
33110F	DSCS	2,160	2,953	4,380
34411F	Special Activities	329	2,079	2,423
35119F	Space Boosters	545	1,186	500
63009F	Strat Dev Special Prog A	1,163	635	430
35160F	DMSP	<u>2,773</u>	<u>4,180</u>	<u>4,880</u>
	TOTAL Missile Procurement	7,691	20,432	24,187
				15,932

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
Aerospace Corporation (CONTINUED)

(\$ In Thousands)

	<u>FY 1979 ACTUALS</u>	<u>FY 1980 ESTIMATE</u>	<u>FY 1981 ESTIMATE</u>	<u>FY 1982 ESTIMATE</u>
<u>OTHER PROCUREMENT APPROPRIATION</u>				
34111F	Special Activities	<u>25,077</u>	<u>28,233</u>	<u>40,434</u>
	TOTAL Other Procurement Appropriation	25,077	28,233	40,434
<u>OPERATIONS & MAINTENANCE APPROPRIATION</u>				
12431F	Defense Support Program	0	0	2,148
31022F	Scien & Tech Intelligence	175	220	330
33110F	DSCS	215	300	440
35119F	Space Boosters	899	988	1,071
63009F	Srat Dev Special Program A	1,812	2,300	860
35170F	Space Support Program	445	460	490
35171F	Space Launch Support Program	0	0	522
	TOTAL Operations and Maintenance	3,546	4,268	5,287
			8,478	14,555
				20,165

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
Aerospace Corporation (CONTINUED)

(\$ In Thousands)

	<u>FY 1979</u>	<u>FY 1980</u>	<u>FY 1981</u>	<u>FY 1982</u>
	<u>ACTUALS</u>	<u>ESTIMATE</u>	<u>ESTIMATE</u>	<u>ESTIMATE</u>
TOTAL Aerospace Corporation	113,180	133,881	167,422	187,485

AEROSPACE CORPORATION. Aerospace Corporation provides scientific and engineering assistance to the Air Force and other DoD agencies primarily in the field of space systems. Efforts include general systems engineering/integration, development planning, space technology, research and experimentation, and foreign technology. Major Air Force programs receiving Aerospace support are the Space Defense, Space Shuttle, Satellite Data System, Defense Support Program, and Special Activities. The other DoD agencies include such organizations as Defense Advanced Research Projects Agency (DARPA), Army, Navy, and Defense Mapping Agency (DMA).

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
Lincoln Laboratory

(\$ In Thousands)

	<u>FY 1979 ACTUALS</u>	<u>FY 1980 ESTIMATE</u>	<u>FY 1981 ESTIMATE</u>	<u>FY 1982 ESTIMATE</u>
<u>RDT&E APPROPRIATION</u>				
63250F	19,700	19,100	21,600	23,900
Basic Program				
Other Programs				
COMSEC	177	235	260	290
Defense Research Sciences	515	945	1,155	1,235
Command, Control and Comm	200	200	715	1,624
Adv Ballistic Re-entry Sys	5,800	7,000	7,000	7,000
Space Surveillance Tech	1,995	1,885	1,975	1,200
Advanced Space Comm	6,000	5,800	6,300	11,800
Advanced Comm Technology	570	600	750	750
Defense Suppression	770	0	0	0
PAVE MOVER	1,000	100	0	0
Acft Identification Systems	0	1,500	1,800	1,800
PLSS	600	1,000	1,200	1,100
JTIDS	870	901	1,217	1,230
Conventional Weapons	350	3,300	2,800	2,414
Night Attack Program	0	200	1,000	1,000
Advanced Weapons	0	0	150	160
TOTAL RDT&E	38,547	42,766	47,922	55,503
<u>Other RDT&E Appropriation</u>				
33401G	1,200	1,175*	1,300*	1,000*
33126K	1,238	1,255	1,295	1,435
TOTAL Other RDT&E	2,438	1,255	1,295	1,435

*Separate NSA Ceiling established for FY 80 and outyears.

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
 Lincoln Laboratory (CONTINUED)

(\$ In Thousands)

	FY 1979 ACTUALS	FY 1980 ESTIMATE	FY 1981 ESTIMATE	FY 1982 ESTIMATE
<u>OPERATIONS AND MAINTENANCE APPROPRIATION</u>				
12424F	3,925	6,352	5,130	4,998
31022F	1,532	2,017	2,712	2,967
33601F	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>	<u>1,000</u>
TOTAL Operations and Maintenance	6,457	9,369	8,842	8,965
<u>OTHER PROCUREMENT APPROPRIATION</u>				
12424F	<u>920</u>	<u>1,000</u>	<u>1,248</u>	<u>1,305</u>
TOTAL Other Procurement	920	1,000	1,248	1,305
TOTAL Air Force	48,362	54,390	59,307	67,208
Subcontracts	<u>-1,170</u>	<u>-18,181</u>	<u>-20,193</u>	<u>-24,225</u>
Air Force Ceiling Estimate	<u>33,192</u>	<u>36,209</u>	<u>39,114</u>	<u>42,983</u>

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
LINCOLN LABORATORY (Continued)

LINCOLN LABORATORY. Lincoln Laboratory is part of the Massachusetts Institute of Technology. The mission of the laboratory is to carry out a program of research and development pertinent to national defense, with particular emphasis on advanced electronics. A major portion of the research program concerns space communication satellite technology and advanced ballistic re-entry system research. The technical program is managed by the Joint Advisory Committee made up of representatives from the Army, Navy, Air Force, and Defense Advanced Research Projects Agency (DARPA). Major Air Force programs being supported by Lincoln Laboratory are the Advanced Ballistic Re-entry Systems, Reconnaissance Sensors and Advanced Space Communications. Also supported are other DOD agencies such as DARPA, Army, Navy, and Defense Communications Agency (DCA).

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
MITRE Corporation

<u>RDTE& APPROPRIATION</u>	(\$ In Thousands)			
	<u>FY 1979 ACTUALS</u>	<u>FY 1980 ESTIMATE</u>	<u>FY 1981 ESTIMATE</u>	<u>FY 1982 ESTIMATE</u>
11312F PACCS	2,605	4,670	3,909	4,100
11316F SAC Communication	2,720	3,378	3,509	4,000
12325F JSS	325	843	1,000	1,000
12411F Surveillance Radar Stations/Sites	800	930	900	720
12412F DEW Radar Stations	1,150	0	0	0
12423F BMENS	1,115	0	1,500	2,000
12432F SLBM Warning System	400	265	0	0
12434F Parameter Acquisition Radar	85	13	0	0
27412F Tactical Air Control Sys	2,645	2,410	2,200	3,000
27415F USAFE CC Sys	945	1,080	3,579	4,388
27423F Advanced Comm Sys	1,952	2,210	1,900	2,400
27431F Tac Air Intel Sys Act	378	235	740	550
28010F Joint Tac Com Prog	4,905	7,710	3,700	3,600
33126F Long Haul Comm - DCS	0	0	662	317
33131F MEECN	0	0	184	198
33401F COMSEC	144	182	270	300
33601F AFSATCOM I	2,452	3,050	3,200	3,400
35114F Traffic Control & Landing Sys	0	0	860	1,000
27417F Tactical Airborne Comm Cont Sys	3,895	5,550	5,431	6,579
61102F Def Research Science	35	48	92	124
62101F Geophysics	13	34	47	75
C3	989	1,550	2,251	1,539
62702F Space Surveillance Tech	1,110	2,120	2,500	2,800
63428F Warning Info Correlation	0	0	900	1,400
63429F Advanced Space Comm	0	1,900	1,672	1,868
63703F CONUS OTB Radar	470	975	864	928
63742F A-A Space ID	130	265	2,040	3,050
63728F Adv Comp Tech	0	0	92	0
63735F WMCCS Arch	2,900	3,335	4,500	4,640
63746F SLAR	0	0	0	93
63747F PAVE MOVER	290	530	1,770	1,710
C3 Adv Dev	522	2,107	1,498	3,197

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
MITRE Corporation (CONTINUED)

	<u>FY 1979 ACTUALS</u>	<u>FY 1980 ESTIMATE</u>	<u>FY 1981 ESTIMATE</u>	<u>FY 1982 ESTIMATE</u>
<u>RD&E APPROPRIATION (CONTINUED)</u>				
64362F	0	85	90	95
64715F	450	490	600	800
64724F	205	685	2,200	2,308
64740F	650	820	1,034	1,304
64747F	80	90	92	99
64750F	75	105	773	645
64751F	0	0	400	100
64754F	3,870	3,870	3,960	4,070
64757F	870	664	500	600
64779F	2,073	1,628	600	642
65807F	63	100	1,130	900
65808F	3,045	1,850	2,500	1,830
78019F	0	0	170	279
TOTAL Air Force RD&E	44,356	55,777	65,819	72,648

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
MITRE Corporation (CONTINUED)

OTHER RDT&E SUPPORT	FY 1979 ACTUALS	FY 1980 ESTIMATE	FY 1981 ESTIMATE	FY 1982 ESTIMATE
31011G*	98	45	377	491
32019K*	0	131	400	450
32018K*	253	0	0	0
33126K*	0	0	368	0
65804D*	299	325	439	489
87791D*	545	1,282	1,566	1,670
87707A*	433	546	576	600
33145A*	178	0	0	0
64745A*	92	0	0	0
68362N*	316	0	0	0
XXXXX*	231	496	600	700
TOTAL Other RDT&E Support	2,445	2,825	4,326	4,400

*Funded by other DOD agencies, but included in Air Force limitations.

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
MITRE Corporation (CONTINUED)

(\$ In Thousands)

	<u>FY 1979 ACTUAL</u>	<u>FY 1980 ESTIMATE</u>	<u>FY 1981 ESTIMATE</u>	<u>FY 1982 ESTIMATE</u>
<u>Other Procurement Appropriation</u>				
11316F SAC COM	181	251	0	0
12423F BMEMS	173	0	0	0
27412F TAC Air Control Sys	0	0	500	1,000
27423F Adv Com Sys	0	0	50	0
28010F Joint TAC Com	0	0	1,000	1,125
33110F DSCS	514	0	1,100	1,100
33126F Long Haul Com	1,418	2,377	4,077	4,187
33601F AFSAT COM	586	618	700	518
35114F Traffic Control & Landing Sys	<u>267</u>	<u>0</u>	<u>0</u>	<u>0</u>
TOTAL	3,139	3,246	7,357	7,930
<u>Operations & Maintenance Appropriation</u>				
12311F NORAD COC	1,633	1,100	2,232	1,283
27415F USAFE CC Sys	1,400	1,304	344	0
31022F Scientific & Tech Intel	115	0	0	0
33126F Long Haul Comm	<u>1,577</u>	<u>848</u>	<u>0</u>	<u>0</u>
TOTAL	4,725	3,252	2,576	1,283
<u>Aircraft Procurement Appropriation</u>				
27423 Advance Comm Sys	<u>0</u>	<u>0</u>	<u>450</u>	<u>0</u>
TOTAL AF CEILING ESTIMATE	54,665	65,100	80,528	86,261

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
MITRE Corporation (Continued)

MITRE. The MITRE Corporation provides scientific and engineering assistance to the Air Force and other DOD agencies primarily in the areas of command and control, communications, sensor and support systems. The Corporation performs systems engineering, technical direction and support of development planning activities. Major Air Force programs being supported by MITRE include the Advanced Airborne Command Post, Airborne Warning and Control System, Joint Tactical Communications Program (TRI-TAC), and various strategic and tactical command, control and communications systems. The other DOD agencies include such organizations as DCA, DARPA, Army, Navy, Assistant Secretary of Defense (Intelligence) and Assistant Secretary of Defense (Test and Evaluation).

FEDERAL CONTRACT RESEARCH CENTERS
Summary by Program Element
Project AIR FORCE

(\$ In Thousands)

	FY 1979 <u>Actual</u>	FY 1980 <u>Estimate</u>	FY 1981 <u>Estimate</u>	FY 1982 <u>Estimate</u>
<u>RD&E Appropriation</u>				
65101F Basic Program	<u>11,000</u>	<u>11,700</u>	<u>12,500</u>	<u>13,500</u>
Total Project AIR FORCE	11,000	11,700	12,500	13,500

Project AIR FORCE. This project is devoted to assisting Air Force decision making by furnishing information and objective findings derived from independent research and analysis of aerospace problems. The program objective is to recommend preferred methods, techniques and instrumentalities for the development and employment of aerospace power. The project is a Federal Contract Research Center (FCRC), operated by The Rand Corporation.

MAJOR IMPROVEMENTS TO AND CONSTRUCTION OF GOVERNMENT-OWNED
FACILITIES FUNDED BY RDT&E

Department/Agency: Air Force

Date: January 1980

PART I. UTILIZATION OF SECTION 2353, TITLE 10 AUTHORITY

Specialized R&D facilities determined to be necessary for the performance of a contract for a Military Department for research and development, may be constructed by or furnished to the contractor and funded from appropriations available for research, development, test and evaluation. The Congress enacted this legislation, now 10 USC 2353, in 1956. This policy is executed through DoD Directive 4215.5. Under this policy, construction of R&D projects for contractors up to \$500,000 is normally approved by the Major Command concerned; the Service Secretary or such delegate as he may authorize approves projects up to \$1,000,000; and the Under Secretary Defense Research and Engineering approves projects over \$1,000,000. The table below provides a summary listing of all such projects accomplished in FY 79 and planned in FY 80 and FY 81:

Facility/Equipment	RDT&E Project Number	Contractor	Location	Total Obligational Authority (Thousands of Dollars)			
				1979	1980	1981	1982
Millstone Radar Site 2/	63428F	Lincoln Laboratory	Westford MA	10.0	10.0		
Miscellaneous Projects Under \$50K	Various	Lincoln Laboratory	Hanscom AFB MA	30.0	32.0		
Construction of a Transmitter and a Receiver/ Operations Building, Transmitter Antenna Foundations and Installation of 8 Trailers 2/	63703F	General Electric Co. Contract F19628-75-C0128	Washington and Somerset Counties ME				

Exhibit RD-4

PART 1. (CONTINUED).

Facility/Equipment	RDT&E Project Number	Contractor	Location	Total Obligational Authority (Thousands of Dollars)			
				1979	1980	1981	1982
SECTION II Projects Planned or Projected							
Bldg 1718 Alterations Reentry Systems 2/ Range 2/	63331F	Lincoln Laboratory	Hanscom AFB MA	75.0			
Satellite Antenna Test	63431F	Lincoln Laboratory	Site to be selected		310.0		
Intermodulation Test Facility 2/	63431F	Lincoln Laboratory	Site to be Selected		135.0		
Bldg 1718 Alterations 2/	63431F	Lincoln Laboratory	Hanscom AFB MA		110.0		
TOTAL PART I				1,152.0	115.0	555.0	

^{1/} Initial listing.
^{2/} Previously listed in RDT&E Justification of Estimates for FY 1980.

Exhibit RD-4

PART 2. UTILIZATION OF RDT&E APPROPRIATION FOR FACILITIES AT GOVERNMENT-OWNED/GOVERNMENT-OPERATED INSTALLATIONS

Chapter 251 (which was amended by the GAO as DoD Instruction 7220.5) provides that RDT&E appropriations may finance the development, design, purchase and installation (including directly related foundations, shielding, environmental control, weather protection, structural adjustments, utilities and access) of equipment or instrumentation required for research, development, test and evaluation activities. The table below provides a summary listing of all such projects for the installation of equipment, where the cost of installation is \$100,000 or more, accomplished in FY 79 and planned in FY 80 and FY 81:

Facility/Equipment	RDT&E Project Number	Location	Total Obligational Authority (Thousands of Dollars)					
			1979	1980	1981	1982		
SECTION I Projects Accomplished or Underway								
MX Vertical Shelter Test 2/ Multiple Aimpoint Facility								
2/	63305F	Luke AFB AZ		5,290.0				
	64312F	Department of Energy's Nevada Test Site NV			6,360.0	7,290.0		
Security Mods, Bldg 30 1/ Active Isolation & Control System 2/	63411F	Johnson Space Center TX			251.0			
	65807F	Holloman AFB NM			327.0			
Ball Screw Drive, 165 Diffuser 2/	65807F	Arnold AFS TN			33.0	57.0		
Rocket Motor Test Equipment 1/	64312F	Arnold AFS TN			817.0	162.0		

SECTION 1
(CONTINUED)

<u>Facility/Equipment</u>	<u>RDT&E Project Number</u>	<u>Location</u>	<u>Total Obligation Authority</u>		
			<u>1979</u>	<u>1980</u>	<u>1981</u>
4877 Test Program Temporary Facilities 2/ Trestle Threat Level Simulator 2/	28010F	Ft Huachuca AZ		136.0	
Rocket Propellant Research Process System 1/ Rocket Propellant Test System 1/	64747F	Kirtland AFB NM		6,396.0	300.0
	62302F	Edwards AFB CA		835.0	
	62302F	Edwards AFB CA		965.0	
Install High Enthalpy Ablation Test (Heat) Equipment 2/	65807F	Arnold AFS TN	625.0	55.0	155.0
Equipment Installation and Alteration of Integrated Maintenance Facility 1/	64406F	Edwards AFB CA		250.0	

PART 2. (CONTINUED)

Facility/Equipment	RDT&E Project Number	Location	Total Obligational Authority			
			1979 (Thousands of Dollars)	1980	1981	1982
<u>SECTION II</u> Projects Planned or Projected						
Base Level Data						
Automation Phase IV (3940) 1/	65807F	Edwards AFB CA			369.9	
Supersonic Aerothermal Tunnel C 2/	65807F	Arnold AFS TN			240.6	
Turbostructure Spin Test Facility 1/	62203F	Wright-Patterson AFB OH			610.0	
Stars Facility 20434 2/	63227F	Wright-Patterson AFB OH			160.0	
Environmental Control Equipment Bldg 32 1/	62102F	Wright-Patterson AFB OH			150.0	
Command Control Communications Facility (SACDIN) 1/	11316F	Vandenberg AFB CA Offutt AFB NE			152.0	
Mod to Install 2nd Facs 1/	62601F	Kirtland AFB NM			150.0	
Computer A/C Upgrade 2/	62601F	Kirtland AFB NM			500.0	
R&D Computer Halon System 2/	62601F	Kirtland AFB NM			300.0	
PART 2 TOTAL			19,385.0	11,422.6	1,669.0	369.9
						Exhibit RD-4
						56

DRAFT 3 UTILIZATION OF RD&E APPROPRIATION FOR MINOR CONSTRUCTION

For in-house installations, construction projects in support of R&D for \$100,000 or less are funded from RDT&E appropriations. Such expenditures are authorized by 10 USC 2674 and the applicable provisions of the current DoD Appropriation Act. Under this procedure, project approval at this level is authorized by the Major Command concerned, or delegated to R&D installation commanders as appropriate. The table below provides a summary total of such minor construction accomplished in FY 79, and the estimated amounts planned for FY 80 and FY 81. All minor construction must result in a complete and usable facility. In no event are two or more minor construction projects or minor and major construction projects to be contrived to form a usable facility.

SUMMARY OF MINOR CONSTRUCTION FUNDED BY ROT&E, AIR FORCE

Exhibit RD-4

1 COMPONENT AIR FORCE	FY 19 80 RDT&E FACILITIES PROJECT DATA			2 DATE January 80
3 INSTALLATION AND LOCATION JOHNSON SPACE CENTER TX		4 PROJECT TITLE SECURITY MODIFICATIONS, BLDG 30		
5 PROGRAM ELEMENT 63411F	6 CATEGORY CODE 310-477	7 PROJECT NUMBER JSC 79-0001 AFR 80-22	8 PROJECT COST (\$000) 251.0	
9 COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
SHIELDING: Walls and Doors..... Ceiling (w/Demolition)..... Floors (w/Demolition).....				95.0 90.0 10.0 <hr/> 3.0
GROUNDING..... Subtotal.....				198.0 <hr/> 30.0
CONTINGENCY (15%)..... Total Contract Cost..... SIOH (10%).....				228.0 23.0 <hr/> 251.0
TOTAL.....				
10 DESCRIPTION OF PROPOSED INSTALLATION				
<p>58</p> <p>Work consists of modifying a portion of the second floor administration wing in Bldg 30 by both NASA and DoD to a low classified functions to be carried out in the CYBER data processing area. Modifications by DoD will provide a secure enclosure to include installation of rf shielding, access controls and alarms, and physical barriers.</p>				
<p><u>PROJECT:</u> Security modifications to Bldg 30 CYBER 174 area.</p> <p><u>REQUIREMENT:</u> Both NASA and DoD will utilize the CYBER data processing center, but DoD classified mission requirements dictate that operations be carried out in a secure area. DoD will require operational access to this area beginning in November 1980.</p> <p><u>CURRENT SITUATION:</u> To support the first six NASA shuttle missions and both NASA and DoD missions thereafter, NASA is performing modifications to the second floor of Bldg 30 to accommodate a leased CYBER 174 computer. These facility modifications will provide for necessary utility and partition type work. Special DoD security modifications, that DoD will be required to provide, are presently programmed in the STS FY80 MOP with availability of funds about Jan 1980.</p> <p><u>IMPACT IF NOT PROVIDED:</u> Should this project not be approved at this time, DoD will be denied use of the secure CYBER until approximately July 1981. Cost increase of approximately \$0.5 million would be incurred for demolition and fire protection modifications at the later date.</p>				

1 COMPONENT AIR FORCE	FY 1980 & FY 1981 INSTALLATION OF RDT&E EQUIPMENT			2 DATE January 80
3 INSTALLATION AND LOCATION ARNOLD AIR FORCE STATION, TENNESSEE		4 PROJECT TITLE ROCKET MOTOR TEST		
5 PROGRAM ELEMENT 64312F	6 CATEGORY CODE 390-614	7 PROJECT NUMBER	8 PROJECT COST (\$000) 979	
9. COST ESTIMATES				
ITEM		U/M	QUANTITY	UNIT COST
Installation (FY 80 & FY 81) Equipment				979
Data Acquisition and Control System				5691
Force Measurement System				1200
X-Ray Machine				800
J-3 Reactivation				583
J-4 Interim Test Capability				207
J-5 Parallel Test Capability				440
J-3 Special Customer Requirements				183
J-4 Special Customer Requirements				315
J-5 Special Customer Requirements				325
FY 80 Installation Equipment				817
FY 81 Installation Equipment				(4731)
				162
				(4034)
10 DESCRIPTION OF PROPOSED INSTALLATION				
PROJECT: Rocket Motor Test at AEDC.				
REQUIREMENT: The full-scale solid propellant rocket motors for the MX missile are to begin development testing at AEDC in Feb, CY 1981. Testing of MX rocket stages II, III, IV and stage separation tests are required by BMO and will be accomplished in AEDC Test Cells J3, J4 and J5. The installation and equipment summarized above is needed to support full-scale MX rocket development.				
CURRENT SITUATION: With the recent approval of full-scale development of the MX missile, the BMO test requirements, overall workload, and first test dates have been defined for AEDC. This new installation and equipment data is proposed to meet the BMO requirement as described above.				
IMPACT IF NOT PROVIDED: If the proposed installations are not approved, there will be no test facilities in the United States capable of supporting MX rocket motor development. Delays in approval of equipment purchase and installation in support of the associated Military Construction project will seriously impact the BMO schedule for MX rocket motor stage development and the first flight of the MX missile.				

1 COMPONENT AIR FORCE	FY 1980 RDT&E FACILITIES PROJECT DATA			2 DATE January 80
3 INSTALLATION AND LOCATION AIR FORCE ROCKET PROPULSION LABORATORY EDWARDS AIR FORCE BASE, CA 93523			4 PROJECT TITLE ROCKET PROPELLANT RESEARCH PROCESS SYSTEM	
5 PROGRAM ELEMENT 62302F	6 CATEGORY CODE 310-632	7 PROJECT NUMBER 800607	8 PROJECT COST (\$000) 835	
9 COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Equipment Enclosures and Special Foundations	LS			405
Equipment Installation	LS			430
Secondary Utilities				(160)
Electric				(80)
Water				(190)
HVAC & Humidity Control				
Project Cost				835
Equipment (Non-Add) (GFE)				
Propellant Curing & Aging Ovens				(200)
1/2 Pint Propellant Mixer				(75)
Rheology Equipment				(150)
Strand Burner				(50)
Window Bomb				(100)
Propellant Mill				(150)
Data Acquisition Equipment				(275)
Total Equipment				(1000)
10 DESCRIPTION OF PROPOSED INSTALLATION Install propellant formulation and propellant mechanical properties test equipment in individual blast protected cubicles to provide the means to conduct formulation studies and validate First Stage, Second Stage and Second Stage (Alternate) contractor candidate MX propellants.				
<p>REQUIREMENTS: The current SAMSO baseline design for the MX missile specifies a mix of Class 1.1 and 1.3 propellants for the three stages of booster propulsion. This required process system will validate and evaluate those candidate propellants for the First and Second Stage which have been selected for the MX missile. For each candidate formulation the validation study will include targeting the propellant properties to match that reported by the contractor. These properties will include rheology studies, burn rate and pressure exponent determinations, mechanical properties and processability. Several propellant characteristics (viscosity, pot life, mechanical properties, ballistic, ingredient cost) affect the production and cost of propellant. Since these additives affect the propellant system in order to identify and resolve any issues encountered in FSD propellant formulation efforts, a thorough mix cycle and mechanical property characterization of MX First and Second Stage propellants is required.</p>				

1 COMPONENT AIR FORCE	FY 1980 RDT&E FACILITIES PROJECT DATA			2 DATE January 80
3 INSTALLATION AND LOCATION AIR FORCE ROCKET PROPULSION LABORATORY EDWARDS AIR FORCE BASE, CA 93523		4 PROJECT TITLE ROCKET PROPELLANT TEST SYSTEM		
5 PROGRAM ELEMENT 62302F	6 CATEGORY CODE 390-612	7 PROJECT NUMBER 800606	8 PROJECT COST (S000) 965	
9 COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Special Foundations	LS			65
Equipment Installation				900
Secondary Utilities				(70)
Electric				(90)
Water				(740)
Exhaust System				
Project Cost				965
Equipment (Non-Add)				
Test Chamber				(300)
Thrust Stand				(80)
Data Acquisition Equipment				(200)
Total Equipment				(580)
10 DESCRIPTION OF PROPOSED INSTALLATION Fabricate and purchase equipment items and install in existing facilities at AFRPL. Construct concrete foundations and utilities for the installation of the rocket propellant test system equipment to support MX propellant research and candidate optimizations. All of the equipment included in this project is readily removable upon completion of the tests.				
REQUIREMENTS: This AFRPL program will assist SAMSO in providing effective technical direction in the full scale development of MX missile system booster propulsion. Some forty motor tests will be conducted to optimize MX propellant candidates for MX and validate contractor formulations. Validation will include evaluation of burning rate, burning rate exponent, ballistic performance and throat erosion. A complete baseline will be established since these propellants have lower solids, lower aluminum and are an all AP system. Successful completion of this program will minimize the risk associated with the first and second stage propellant candidates for MX full scale development.				

1. COMPONENT AIR FORCE	FY 1981 RDT&E FACILITIES PROJECT DATA			2. DATE January 80
3. INSTALLATION AND LOCATION EDWARDS AIR FORCE BASE, CALIFORNIA		4. PROJECT TITLE EQUIP INSTALLATION & ALTER INTEGRATED MAINTENANCE FACILITY (IMF)		
5. PROGRAM ELEMENT 64406F	6. CATEGORY CODE 212-216	7. PROJECT NUMBER 81-0505	8. PROJECT COST (\$000) 250.0	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Equipment Installation Contingencies (10%)	LS			227.3 22.7 250.0
(Excluded Costs)				
Laminar Flow Portable Clean Room	ea	3	233.0	(700.0)
Electronic System Test Set	ea			(1,200.0)
Missile Simulator	ea			(750.0)
Pylon Carrier Assembly Fixture	ea			(100.0)
Carrier Aircraft Equipment (CAE)	ea			(50.0)
Component Test Benches	ea	4	21.0	(85.0)
Radial CG Measurement Instrument	ea			(200.0)
TOTAL EXCLUDED COSTS				(3,085.0)
10. DESCRIPTION OF PROPOSED INSTALLATION Alter existing Integrated Maintenance Facility (Bldg 369) by: (1) providing flangible walls/doors, (2) providing two gravity tiedowns, & (3) vapor proofing interior walls. Install electrical system test set to include raised flooring, portable clean room & air conditioning (GFE), & rerouting of monorail & cable trays. All utilities and other support as required for a complete and usable facility.				
PROJECT: Provides the test capabilities required for DT&E and IOT&E testing of the Prototype Miniature Air Launched System (PMALS) Program.				
REQUIREMENT: The Miniature System Project (MSP) requires test capabilities in support of the PMALS. Existing test facilities will be used by contractor and Air Force personnel to accommodate testing of: (1) Miniature Vehicle/Dispenser, (2) the carrier missile, (3) a modified F-15A aircraft, (4) Carrier Aircraft Equipment (CAE), (5) mission software, (6) Air Launch Control Center (ALCC), and (7) a Prototype Mission Operations Center (PMOC). PMALS is scheduled to enter the engineering development and test phase - with approval at the DSARC IA now scheduled on 15 April 1980.				
CURRENT SITUATION: There are no appropriately configured existing facilities available to support flight testing of the PMALS. Equipment will be installed in existing modified facilities.				
IMPACT IF NOT PROVIDED: Lack of the required test capabilities will delay this program indefinitely.				
SPECIFIC PURPOSE: Provide support to engineering test and development of the PMALS by installing equipment and making changes in an existing building.				

1 COMPONENT AIR FORCE	FY 1982 RDT&E FACILITIES PROJECT DATA			2 DATE January 80
3 INSTALLATION AND LOCATION EDWARDS AIR FORCE BASE, CALIFORNIA		4 PROJECT TITLE ADAL 3940 FOR CONSOLIDATED ADP FACILITY		
5 PROGRAM ELEMENT 65807	6 CATEGORY CODE 610-711	7 PROJECT NUMBER	8 PROJECT COST (\$000) 369.9	
9 COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
ADAL 3940 For Consolidated ADP Facility Equipment Installation Air Conditioning Modify Air Conditioning System Motor Generator Halon Protection Detection Fire System Two Insolation Transformers & Electrical Connection	LS LS TN LS LS LS LS	10		89.2 280.7 (51.2) (16.0) (145.2) (61.0) (7.3)
Total				369.9
10 DESCRIPTION OF PROPOSED INSTALLATION Remodel and refurbish Bldg 3940 to house the Base Level Data Automation Phase IV computer system. Area to be provided with a raised floor, air conditioning and Halon fire protection system. Provide all necessary utilities and support. Air conditioning: 10TN.				
<p>PROJECT: Provide for interior rework of Bldg 3940 to house the Base Level Data Automation Phase IV computer system.</p> <p>REQUIREMENT: Modifications to Bldg 3940 are required to house the BLDA Phase IV computer system which is scheduled for delivery to Edwards AFB in Jun 82. This project has been approved for implementation by Project Directive HAF-P76-7, 24 Sep 76.</p> <p>CURRENT SITUATION: The UNIVAC 1050II computer is located in Bldg 3735 and the Burroughs B3500 is located in Bldg 1408. Construction of the Flight Test Mission Control Complex (FTMCC) for the CYBER74 computer will release floor space in Bldg 3940. Modifications of this space will provide for the BLDA Phase IV and eliminate the need for a new facility.</p> <p>NOTE: Repair existing raised floor/computer room as an expense item - \$5,500.</p>				

1 COMPONENT AIR FORCE	FY 1980 RDT&E FACILITIES PROJECT DATA			2 DATE January 80
3 INSTALLATION AND LOCATION ARNOLD ENGINEERING DEVELOPMENT CENTER, TENNESSEE		4 PROJECT TITLE SUPERSONIC AEROTHERMAL TUNNEL C		
5 PROGRAM ELEMENT 65807F	6 CATEGORY CODE 390-155	7 PROJECT NUMBER ARN 78-0039	8 PROJECT COST (\$000) 240.6	
9 COST ESTIMATES				
ITEM		U/M	QUANTITY	UNIT COST (\$000)
Supersonic Aerothermal Tunnel C				
Stilling Chamber & Nozzle (Non-Add)				(402.8)
Secondary Utility Work				240.6
<p>64</p> <p>10 DESCRIPTION OF PROPOSED INSTALLATION Install a stilling chamber and a nozzle with an exit diameter of 25 inches.</p> <p>PROJECT: Provide capability to combine "clean" aerodynamic flow with adequate stagnation temperatures to duplicate realistic flight environment.</p> <p>REQUIREMENT: As modern missiles accelerate toward their targets, severe aerodynamic heating occurs, particularly on the fragile radome or IR dome. Many failures have occurred when domes fractured due to excessive thermal conditions. Even under less severe conditions, thermal distortion causes a displacement of the image the seeker "sees", adversely affecting its kill accuracy. High temperatures can also cause unexpected changes in the seeker electronics. An urgent need has been expressed by many government and industry experts to obtain a capability to test current and future missile systems in a laboratory aerothermal environment. The AMRAAM program requires such testing in mid-1980.</p> <p>CURRENT SITUATION: The present test capability simulates the Mach number but does not duplicate the temperatures and heating rates that occur in flight. Data therefore must now be extrapolated to flight conditions and simulated artificially by other heating methods which often give erroneous responses.</p> <p>IMPACT IF NOT PROVIDED: Millions of dollars will be wasted by utilizing the "cut and try" methods that have been used up til now. Operational effectiveness of the missile will suffer from an inability to fine-tune the very heart of the missile system under realistic flight conditions. The AMRAAM Program will not be supported.</p>				

1 COMPONENT AIR FORCE	FY 19 80 RDT&E FACILITIES PROJECT DATA			2 DATE January 80
3 INSTALLATION AND LOCATION WRIGHT PATTERSON AIR FORCE BASE, OHIO			4 PROJECT TITLE INSTALL TURBO-STRUCTURE SPIN TEST FACILITY, BLDG 71B	
5 PROGRAM ELEMENT 62203F	6 CATEGORY CODE 318-612	7 PROJECT NUMBER	8 PROJECT COST (\$000) 610.0	
9 COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
MC Alterations, Equip Inst & Equip Costs				
I. Minor Construction Costs (EEIC 529)	LS			(98.5)
II. Equipment Installation (EEIC 592)	LS			610.0
III. Unfunded Cost (Design 8%)	LS			(56.7)
IV. Cost of Equipment (By Other Appropriations)	LS			(746.0)
10 DESCRIPTION OF PROPOSED INSTALLATION				
<p><u>SPECIFIC PURPOSE:</u> To install a turbo-structure spin test facility in J-Bay, Building 71B, WPAFB.</p> <p><u>PROJECT:</u> Make alterations to J-Bay including installation of masonry walls, enclosures; installing acoustic ceiling, lighting, air conditioning, paint walls and floors; providing foundations for equipment; installation of extensive piping, valves, controls and secondary wiring for equipment installation.</p> <p><u>REQUIREMENT:</u> This facility when completed will provide the Air Force Aero Propulsion Laboratory with the capability to perform centrifugal and thermal loading tests on turbine engine components. It will enable investigations on the structural dynamic response of bladed disk assemblies; material characterization under rotating conditions and experimental verification of analytically determined stresses and associated life prediction techniques.</p> <p><u>CURRENT SITUATION:</u> This capability currently does not exist at WPAFB.</p> <p><u>IMPACT IF NOT PROVIDED:</u> The USAF will not be able to perform structural integrity testing of its aircraft turbo machinery components in this environment. The lack of this experimental and developmental capability is considered a serious detriment to the establishment and verification of turbine engine component test data.</p>				

1 COMPONENT AIR FORCE	FY 1980 RDT&E FACILITIES PROJECT DATA			2 DATE January 80
3 INSTALLATION AND LOCATION WRIGHT PATTERSON AIR FORCE BASE, OHIO		4 PROJECT TITLE INSTALL/REPLACE ENVIRONMENTAL CONTROL EQUIP IN FACILITY 20032		
5 PROGRAM ELEMENT 62102F	6 CATEGORY CODE N/A	7 PROJECT NUMBER 78-9706 R-3	8 PROJECT COST (\$000) 150.0	
9 COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
I. Equipment Installation (592: Funded) a. Structural (Foundations, Supports) b. Chillers c. Heat Exchangers d. Mechanical (Pipe, Valves, Fittings, Controls) e. Electrical (Conduit, Wire, Switches)	LS EA LS LS	1	25000.0 5000.0 50.0 25.0	20.0 25.0 30.0 50.0 25.0 150.0
II. *Equipment Cost (Excluded)	LS			(392.5)
III. Design Cost (Unfunded)				(12.0)
10 DESCRIPTION OF PROPOSED INSTALLATION PROJECT: Replace, install control chiller and extend chilled water lines to RDT&E equipment for year-round cooling.				
REQUIREMENT: Many items of RDT&E equipment must be cooled with treated water to prevent corrosion and excessive scale accumulation.				
CURRENT SITUATION: Many types of RDT&E equipment are cooled with tap water, which is wasted to drain. The RDT&E equipment becomes limed, restricted, and damaged by this method of cooling.				
IMPACT IF NOT PROVIDED: Critical RDT&E tests will be delayed or suspended due to equipment failure/damage due to excessive heat/corrosion.				
REVISION 3: Cost increase due to revised contractor estimate. This revision requires that funds previously programmed as excluded equipment cost on R-2 be reprogrammed as equipment installation costs on R-3. The equipment cost referred to in Block 9 represents \$392,500 worth of existing RDT&E equipment which was not indicated on R-2.				

1 COMPONENT AIR FORCE	FY 1980 RDT&E FACILITIES PROJECT DATA			2 DATE January 80
3 INSTALLATION AND LOCATION Various, CONUS			4 PROJECT TITLE Command and Control Communications Facilities (SACDIN)	
5 PROGRAM ELEMENT 11316F	6 CATEGORY CODE 131-000	7 PROJECT NUMBER ES-81-001B ES-81-002B	8 PROJECT COST (\$000) 152	
9 COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Command and Control Comm Facilities..... Offutt AFB, NE Equipment Installation Project No. ES-81-001B	LS			152
Vandenberg AFB, CA Equipment Installation Project No. ES-81-002B	LS			(127)
	LS			(25)
10 DESCRIPTION OF PROPOSED INSTALLATION Alterations to mechanical and electrical systems and other necessary support. Area includes communications and operations rooms, cryptographic and equipment maintenance areas.				
<p><u>PROJECT:</u> This project will provide those non-construction items required at two installations in support of SAC Digital Network (SACDIN) equipment installation. See companion projects numbered ES-81-001A and ES-81-002A for construction costs.</p> <p><u>REQUIREMENT:</u> This project is required to provide the environmentally controlled facilities necessary for limited field testing of the SACDIN system. This testing is required to support a production decision.</p> <p><u>CURRENT SITUATION:</u> The existing SAC automated command and control system is currently using equipment which is obsolete and incompatible with other communications equipment with which it must interface, new equipment must be installed if the SAC system is to be an effective sub-system to the worldwide Command and Control Network. However, existing structural limitations preclude this change-over without first modifying these facilities. This project will provide the re-configuration necessary to accommodate these changes.</p> <p><u>IMPACT IF NOT PROVIDED:</u> This construction is in support of SACDIN which is an upgrade of CINCSAC's Command and Control System. Without this system the mission of SAC would be impaired.</p>				

1 COMPONENT AIR FORCE	FY 1981 RDT&E FACILITIES PROJECT DATA			2 DATE January 80
3 INSTALLATION AND LOCATION KIRTLAND AFB, NM		4 PROJECT TITLE MOD & INSTALL 2ND FACS MACHINE		
5 PROGRAM ELEMENT 62601F	6 CATEGORY CODE 610-711	7 PROJECT NUMBER -	8 PROJECT COST (\$000) 150.00	
9 COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
INSTALLATION OF 2ND FACS MACHINE IN BLDG 412 (AFWL's R&D COMPUTER FACILITY)	L/S			150.0
88 10 DESCRIPTION OF PROPOSED INSTALLATION				
<p>Rehab and modify the utility systems in Bldg 412 (AFWL's R&D Computer Facility) for the installation of the 2nd FACS.</p> <p><u>PROJECT:</u> Rehab and modify utility systems.</p> <p><u>REQUIREMENT:</u> The expansion of the utility systems in Bldg 412 to support the existing equipment as well as the 2nd FACS computer that is being added.</p> <p><u>CURRENT SITUATION:</u> The continual demand for Computational Support has steadily increased. To meet the demand, AFWL has added and will continue to add new equipment to support these new requirements. The existing utility system is inadequate to support these systems.</p> <p><u>IMPACT IF NOT PROVIDED:</u> Without this project AFWL will become unable to support needed additional equipment and unable to respond to customer requirements and all excess workload would have to be contracted commercially (\$2,500/hour).</p>				

Section 9

DEPARTMENT OF AIR FORCE
RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
FLIGHT SIMULATOR PROGRAMS
(\$ in Thousands)

PROGRAM ELEMENT/PROJECT	FY 1979 ACTUAL	FY 1980 ESTIMATE	FY 1981 ESTIMATE	FY 1982 ESTIMATE
62205F TRAINING AND SIMULATION TECHNOLOGY (PARTIAL PE)	5,282	4,012	5,400	5,850
62205F/1123 (FLYING TRAINING DEVELOPMENT)	(592)	(798)	(900)	(1,000)
62205F/1192 (ADVANCED SIMULATOR FOR PILOT TRAINING)	(3,886)	(2,500)	(3,700)	(3,950)
62205F/6114 (SIMULATION TECHNIQUES FOR AIR FORCE TRAINING)	(804)	(714)	(800)	(900)
63227F ADVANCED SIMULATOR DEVELOPMENT	2,900	2,000	3,200	4,500
63227F/1958 (SIMULATION TECHNOLOGY FOR PROTOTYPE SYS)	(500)	(0)	(0)	(0)
63227F/2363 (ADVANCED TACTICAL AIR COMBAT SIMULATOR)	(2,400)	(2,000)	(3,200)	(2,400)
63227F/2364 (ADVANCED C16 VISUAL/SENSOR SYS)	(0)	(0)	(0)	(2,100)
63751F INNOVATIONS IN EDUCATION & TRAINING (PARTIAL PE)	300	300	300	500
63751F/2359 (PILOT PERFORMANCE MEASUREMENT)	(300)	(300)	(300)	(500)

Section 9

DEPARTMENT OF AIR FORCE
RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
FLIGHT SIMULATOR PROGRAMS (CONT'D)
(\$ in thousands)

<u>PROGRAM ELEMENT/PROJECT</u>	<u>FY 1979 ACTUAL</u>	<u>FY 1980 ESTIMATE</u>	<u>FY 1981 ESTIMATE</u>	<u>FY 1982 ESTIMATE</u>
<u>64227F</u> FLIGHT SIMULATOR DEVELOPMENT	<u>11,835</u>	<u>6,300</u>	<u>17,900</u>	<u>27,600</u>
64227F/2201 (B-52 AERIAL REFUELING/KC-135 BOOM OPERATOR PART TASK TRAINER)	(135)	(400)	(0)	(0)
64227F/2269 (B-52 ELECTRO-OPTICAL VIEWING SYS)	(1,100)	(2,000)	(200)	(0)
64227F/2325 (SIMULATOR DEVELOPMENT ACTIVITIES)	(700)	(700)	(1,000)	(1,600)
64227F/2360 (TACTICAL COMBAT TRAINER)	(9,900)	(3,200)	(16,700)	(26,000)
27252F EF-111A (SIMULATOR PORTION ONLY)	0	4,000	5,400	2,400
<u>11113F</u> B-52 Squadrons				
11113F/2632 (B-52 OAS/CMI WEAPON SYSTEM TRAINER MODIFICATION)	(0)	5,900	7,200	700
TOTAL	20,317	22,512	39,400	41,550

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